



Evolutionary Biology
New Perspectives on Its Development 3

Richard G. Delisle *Editor*

Natural Selection

Revisiting its Explanatory Role in
Evolutionary Biology

 Springer

Chapter 9

When Panpsychism Met Monism: Why Did the Philosopher Theodor Ziehen Become a Crucial Figure for the Evolutionary Biologist Bernhard Rensch?



Georgy S. Levit and Uwe Hossfeld

Abstract Theodor Ziehen was a well-known German psychiatrist and experimental psychologist of the first half of the twentieth century. But he was also an obscure philosopher who developed a very sophisticated and radical form of panpsychism. While Ziehen’s work left few traces within the history of philosophy itself, his epistemology enjoyed significant influence within German evolutionary biology. Most prominently, Ziehen had a great impact on the “co-architect” of the German evolutionary synthesis, the zoologist Bernhard Rensch. Our paper has two major objectives: first, to sketch Ziehen’s distinctive contribution to philosophy and, second, to explain his importance for Rensch. Our hypothesis is that Ziehen’s monism and nomotheism constituted the philosophical foundation of Rensch’s evolutionary universalism. Monism was a prominent philosophical position within the German tradition of evolutionary biology beginning with Ernst Haeckel and remained influential thereafter due to Rensch and some other of his contemporaries. Nomotheism, the idea of elevating biological regularities to the level of universal laws also became prominent in biology due to Ernst Haeckel and, in a modified form, was promoted by Rensch as well. For Rensch, universal selectionism best satisfied the philosophical requirements of monism and nomotheism. Furthermore, Rensch’s monism and his version of determinism (polynomic determination) turned out to be a selectionist interpretation of the idea of directionality in evolution.

Keywords Theodor Ziehen · Bernhard Rensch · Ernst Haeckel · Determinism · Panpsychism · Nomotheism · Evolutionary synthesis · Monism

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R. G. Delisle (ed.), *Natural Selection, Evolutionary Biology – New Perspectives on Its Development 3*, https://doi.org/10.1007/978-3-030-65536-5_9

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9.1 Introduction

Theodor Ziehen was a well-established German psychiatrist and psychologist and a marginal philosopher who developed a very sophisticated and radical form of positivism (Ruschmeier 1999; Gerhard and Blanz 2002; Gerhard 2004; Levit and Hossfeld 2020). His contemporary, the founder of bolshevism, Vladimir Lenin, considered Ziehen a proponent of empirio-criticism, as developed by Ernst Mach and Richard Avenarius. Yet Ziehen never achieved their prominence in philosophy (Fig. 9.1).

Despite his small profile in the history of philosophy, Ziehen became a prominent figure in German evolutionary biology. This was primarily due to the fact that the key “co-architect” of the German evolutionary synthesis, Bernhard Rensch, regarded Ziehen as his major philosophical inspiration. Rensch’s own philosophy laid the methodological foundations for his evolutionary biology and as a result Ziehen became central to Rensch’s entire theoretical system (Ruschmeier 1999; Levit et al. 2008). Ziehen’s work also heavily influenced another towering figure of modern biology, the founder of biological systematics, Willi Hennig (Rieppel 2007, 2016). Ziehen even made an impact on the “German Darwin”, Ernst Haeckel, who in his last years became aware of Ziehen’s work, cited him, and exchanged some letters with him. Drawing on his psychological work, Ziehen also published a joint paper with the German geneticist and developmental biologist Valentin Haecker (Hossfeld et al. 2017, 2019) (Fig. 9.2).

Ziehen’s obscurity as a philosopher is remarkable. For example, the extensive *Stanford Encyclopedia of Philosophy* provides only three references to Ziehen in the context of discussing logic and psychology, but without mentioning his major philosophical publications.¹ *The Oxford Companion to Philosophy*, which mentions both Ernst Mach and Richard Avenarius (with quite similar philosophical profiles), completely neglects Ziehen (Honderich 2005). *The Cambridge History of Philosophy (1870–1945)* includes only one reference to one Ziehen’s psychological publication (Baldwin 2003, p. 104) completely ignoring his fundamental philosophical works. Perhaps even more startling, this is also true of German-language textbooks and encyclopaedias. The dictionary *Philosophie und Naturwissenschaften* (Philosophy and Natural Sciences), specifically aimed to elucidate the connection between science and philosophy, does not mention Ziehen at all (Hörz et al. 1997) (Fig. 9.3).

Given this obscurity, the question stands why he was of such interest to German biologists and, most importantly, to Rensch. Our hypothesis is that Ziehen’s panpsychism was a good conceptual fit with a specific version of monism prominent in German evolutionary biology during both the first and the second Darwinian revolutions (Levit and Hossfeld 2017). Furthermore, the overemphasis Ziehen placed on laws and lawfulness nourished Rensch’s determinism. These two cornerstones of Rensch’s metaphysics (monism and determinism) allowed him to establish an idea of evolutionary progressionism. After turning from neo-Lamarckism to

¹<https://plato.stanford.edu/search/searcher.py?query=Ziehen>



Fig. 9.1 Portrait of Theodor Ziehen (UAHW, Rep. 40-VI, Nr. 2, Bild 43)



Fig. 9.2 Valentin Haecker (second from the left) handing his rector's office over to Theodor Ziehen in 1927 at the University of Halle (UAHW, Rep. 42, N1338)

panselectionism in the mid-1930s, Rensch instrumentalized the theory of natural selection to serve these philosophical objectives (Levit et al. 2008).

In this paper, we will first contextualize Ziehen's philosophy by introducing the key figures of the Darwinian revolutions in Germany. Then we will outline the main themes of Ziehen's epistemological work within the tradition of monism, before returning to a discussion of Bernhard Rensch and his interest in Ziehen. Finally, we will demonstrate the role of natural selection in Rensch's all-embracing theoretical system.

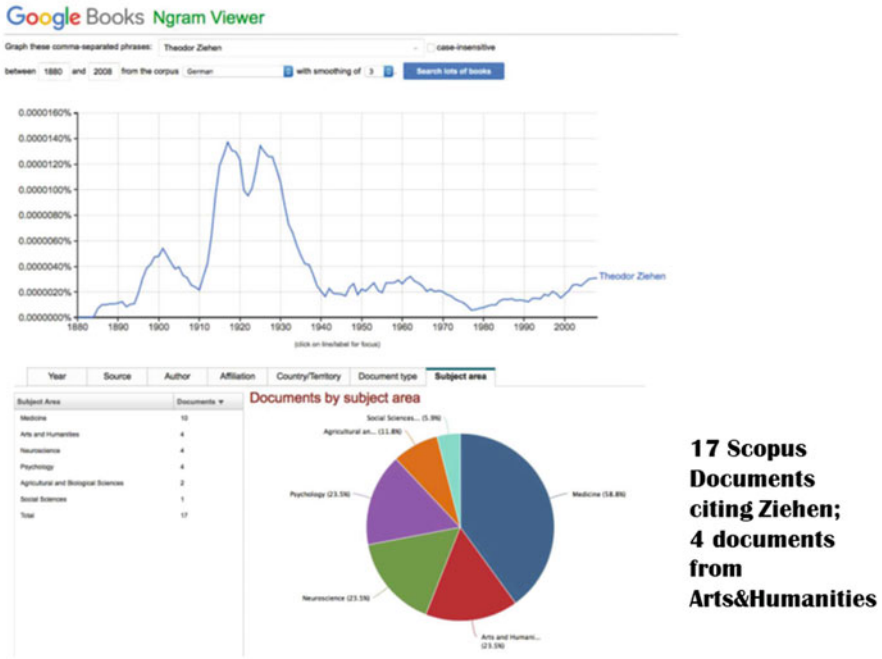


Fig. 9.3 Diagram showing Ziehen almost unknown in the history of humanities (established by Dr. Dmitry Prokudin, St. Petersburg)

9.2 Who Is Who in German Evolutionary Biology: The First and the Second Darwinian Revolutions in Germany

Most historians of biology agree that there were three major historical forms of Darwinism (Reif et al. 2000; Bowler 2003; Kutschera and Niklas 2004; Junker 2004; Levit and Hoßfeld 2011; Kolchinsky 2014; Delisle 2017). *Classical Darwinism* is Darwin’s own theory, which advanced the very idea of organic evolution and common descent and introduced the principle of natural selection within a broad theoretical context.

Classical Darwinism was to be followed by a split between *neo-Darwinism* and *old-school-Darwinism* (Levit and Hoßfeld 2006). At the end of the nineteenth century, Canadian-born English psychologist George John Romanes recognized the crucial importance of the question “whether natural selection has been the sole, or but the main cause of organic evolution” (Romanes 1895, p. 1). Answering this question, Romanes opposed Darwin, who admitted that natural selection has been assisted by the “subordinate principles”, and Alfred Russel Wallace along with August Weismann, maintaining that natural selection should be regarded as the only cause of evolution. To denote the “the pure theory of natural selection to the

exclusion of any supplementary theory”, Romanes coined the term neo-Darwinism (Romanes 1895, p. 12). Under “supplementary theories”, Romanes understood “Lamarckian factors” (use-inheritance) and the theory of sexual selection. The original Darwinian line of thinking—which preserved the priority of natural selection but added both Lamarckian and selectionist factors along with moderate orthogenesis and some mutationism—was continued by the “old-Darwinian” school represented, first of all, by Haeckel and his successor at Jena University, Ludwig Plate (Levit and Hoßfeld 2006; Gliboff 2012).

Finally, the third form, the *Synthetic Theory of Evolution* (STE) or the *Modern Synthesis* or the *Evolutionary Synthesis* originated in the early 1930s, after a period characterized by the “eclipse” of Darwinism (Bowler 1983) and the associated dominance of alternative (non-Darwinian) theories of evolution. According to Ernst Mayr, the Synthesis was completed in 1947, and the so-called period of “post-synthesis” then began (Mayr 1999, p. 20). The synthetic theory of evolution was “cosmopolitan” insofar as it proposed a logically coherent and empirically well-substantiated theoretical system which incorporated several branches of biology including classical genetics, population genetics, molecular genetics, systematics, evolutionary morphology, developmental biology, paleontology, etc. Within the STE, “non-selectionist factors of evolution, especially isolation, chance events, and population size are emphasized. Selection is regarded as important, but only as one of several evolutionary factors” (Reif et al. 2000). With all these factors taken into account, the STE succeeded in proposing a coherent theory of macroevolution, although its approach may be seen as reductionist, i.e. as reducing macroevolutionary processes to microevolutionary ones.

In Germany, two major figures responsible for the growth of evolutionary theory in the first and the second period were Ernst Haeckel and Bernhard Rensch, respectively. Haeckel was a younger contemporary of Darwin and one of his most influential (although controversial) proponents on the continent (Hossfeld 2010; Hopwood 2015; Levit and Hossfeld 2019). Haeckel belonged to the old-Darwinian current—his goal was to exactly follow Darwin in his description of evolutionary mechanisms. Rensch was, arguably, the most influential figure on the international scene of what is known as the Modern Synthesis or the Second Darwinian revolution in Germany (Levit and Hossfeld 2017). Simply put, Haeckel and Rensch were the two most important advocates of Darwinism in German lands in both the “classical” and “synthetic” periods of evolutionary biology.

Rensch was not the only German advocate of the evolutionary synthesis, however. Before and during the Second World War, he was a member of a movement involving dozens of German scientists including Gerhard Heberer, a zoologist and anthropologist from Jena who was, during the Third Reich, one of the crucial figures of the German evolutionary synthesis. Heberer influenced the Synthesis in Germany in two ways. First, he organized and edited the multi-author book *Die Evolution der Organismen* (1943). This collection is the most comprehensive statement of the Synthesis published during its formation phase in Germany. It resembled Julian Huxley’s *The New Systematics* (Huxley 1940; see also Hoßfeld 1997). The nineteen contributors to *Die Evolution* predominantly advocated for selectionism and oppose

neo-Lamarckism, saltationism and orthogenesis. All contributors may be considered Darwinians, but Heberer, Rensch, Nikolai Timoféeff-Ressovsky and Walter Zimmermann arguably contributed most to the Synthesis. The topics in the book range from a philosophical analysis of the theory of descent and the refutation of typology to biological proofs of the theory of descent; methods of phylogenetics; ethology; phylogeny of plants, animals and humans; as well as population genetics, selection theory and macroevolution.

The only philosopher who contributed to Heberer's volume was the Darmstadtian theorist Hugo Dingler, who can be considered the "official" philosopher of the "synthetic" movement in Germany. Dingler wrote the first chapter of the book with the ambitious title, "Die philosophische Begründung der Deszendenztheorie" (The Philosophical Foundation of Evolutionary Biology). Although Dingler worked very closely with the German "synthetic" Darwinian movement, it was not he who determined the theoretical pathways of the major German synthetic evolutionist Rensch; it was Ziehen.

9.3 Theodor Ziehen's Life Path

It is difficult to attach Ziehen to any particular scientific discipline. He was a psychologist, neurologist, psychiatrist and philosopher who enjoyed great fame during his lifetime, but who has since been almost completely neglected by the history of science and philosophy: "Theodor Ziehen belongs among the great universal thinkers of the end of the nineteenth century and the twentieth century. Unfortunately, his accomplishments have largely been forgotten, although contemporaries compared him to Einstein and Leibniz" (Gerhard and Blanz 2004).

Ziehen was born on 12 November 1862 in Frankfurt am Main as the son of Protestant theologian, philologist and writer, Eduard Ziehen (Ziehen 1923, p. 211). His brother Ludwig Ziehen is known as a pedagogue and historian. Ziehen attended a so-called humanist high school (*humanistisches Gymnasium*), where he became proficient in classical languages (Greek and Latin) and showed philosophical interest especially in the philosophy of Plato, Kant and Schopenhauer and even in Indian philosophy. Ziehen himself wrote about this period of his life: "Already at that time I decided that philosophy is the ultimate objective of my life" (Ziehen 1923, p. 220).

Despite his love for philosophy, Ziehen decided to study medicine because it was the only way to receive a stipend which he urgently needed. In 1881, he enrolled at a Würzburg university, where he attended classes in the history of philosophy by Georg Neudecker (born 1850) who, in his turn, was significantly influenced by Fichte. Following Neudecker's advice, Ziehen studied modern philosophers, paying special attention to Spinoza, Hume, Hegel and George Berkeley. From the side of the natural sciences, he was deeply impressed by the famous botanist Julius Sachs (1832–1897) (Ziehen 1923, p. 221). Two years later (1883), he moved to Berlin to continue his medical education and received his doctorate in 1885 with a PhD thesis


entitled, *Über die Krämpfe infolge elektrischer Reizung der Großhirnrinde* (On the Spasms of the Cerebral Cortex as a Consequence of Electrical Stimulation). His decision to specialize in psychiatry was connected with its proximity and relevance to psychology and philosophy. Besides medicine and philosophy, Ziehen studied mathematics and theoretical physics.

In 1885, he began to work as an assistant volunteer at the famous mental hospital in Görlitz under the guidance of Karl Ludwig Kahlbaum, and in 1886, he moved to Jena to become a “senior doctor” (Oberarzt) in Otto Binswanger’s psychiatric clinic (Castell 2003, p. 422). Ziehen remained in Jena for 14 years. At that time, Jena was one of the major centres of Darwinism due to the activities of Ernst Haeckel with whom Ziehen was in contact (Fig. 9.4). In Jena, Ziehen also came into contact with Friedrich Nietzsche, who was one of Ziehen’s patients (Nenadić 2011).

In 1887, Ziehen completed his *Habilitation* (Dr. sc. thesis) with the topic *Sphygmographische Untersuchungen an Geisteskranken* (Sphygmographic Studies on Mentally Ill Patients) and became a “Privatdozent” (lecturer) in psychiatry (Castell 2003, p. 423).

In 1892, Ziehen became an “extraordinary” (associate) professor in Jena, and in 1896, he left the clinic to open a private neurological practice (Castell 2003, p. 424). In 1900, he was offered the position of professor of psychiatry in Utrecht (Holland), and 3 years later (1903), he became the chair in psychiatry at the University of Halle. After spending only half of a year in Halle, Ziehen moved to Berlin to become the director of a newly established clinic for psychiatry and neurology at the famous Charité Hospital (Nenadić 2011), a post he maintained until his retirement in 1912, during which time he received (in 1910) a doctorate (*honoris causa*) from the Philosophical Faculty at Berlin University for his important contributions to philosophy (Castell 2003, p. 425). However, his position as clinic director left him little time for philosophical occupations, and in 1912, he moved with his family to a small villa in Wiesbaden, where he spent a few years devoted to psychology and philosophy as an independent scientist (Nenadić 2011). During the First World War, Ziehen helped establish the Flemish University in Ghent, but in 1917, he came back to Halle as a professor of philosophy, co-director of philosophical seminars and keeper of a neurophysiological collection. In this period, he shared his time between philosophy, child psychology and pedagogy. It is also in this period when Ziehen and Rensch first crossed paths as Rensch began studying biology, chemistry and philosophy at the University of Halle in 1920 (Dücker 2000, p. 3). Rensch was deeply impressed by Ziehen’s philosophy and personality, and as he put it in his autobiography: “The great event was for me the lectures of Professor Theodor Ziehen on the history of philosophy, epistemology and logic as well as on *Naturphilosophie*. I was fascinated by this paramount personality right from the start” (Rensch 1979, p. 35). In Rensch’s autobiography, published in 1979, Ziehen is the most cited person second only to Darwin (Fig. 9.5).

In 1922, Ziehen became dean of the philosophical faculty, and in 1927 he replaced Valentin Haecker as the rector of the university in Halle (Nenadić 2011). When Rensch completed his PhD in 1922, it was Ziehen who signed his certificate. In 1930, Ziehen retired and moved to Wiesbaden, where he died on 29 December


 Jena 2. 11. 91

Ihre gütigen Jena Briefe!

Ich ist in der nächsten Sitzung
 der naturwissenschaftl. Vereinung in Jena
 der letzten Platz nicht eingenommen wird,
 nur ich bislang verpöndet Ihnen einen
 dank für die freundliche beziehung Ihre
 anfragegenau mitgeteilt. Ich darf
 Ihnen jetzt wohl erwidern herzlich von
 Ihnen, das mir noch allen ein wünsch
 nach dem zu viel gewesen ist.

Mit vorzüglicher Gedächtnis

Ihre
 ergebener
 Th. Ziehen

Fig. 9.4 One of four letters of Theodor Ziehen to Ernst Haeckel (EHH Archiv der FSU Jena). From their letter exchange (1891–1908), it follows that they took part in joint meetings and exchanged publications

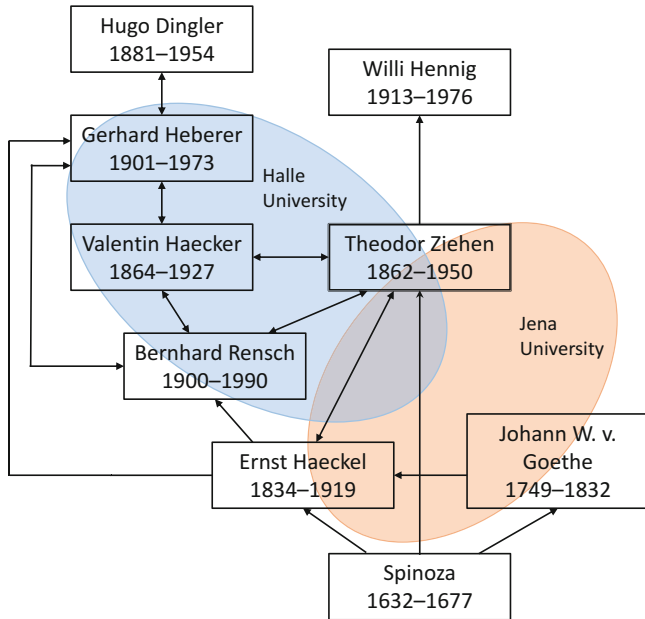


Fig. 9.5 Theodor Ziehen’s personal network

1950. He avoided membership in the Nazi Party, and never supported National Socialism (Castell 2003, p. 426), which was unusual among German physicians and especially psychiatrists; 45% of German physicians belonged to the Nazi party, about 7 times the mean rate for the employed male population of Germany (Seeman 2005). Psychiatrists were among most enthusiastic participants in the regime (Robertson et al. 2017).

Ziehen’s entire oeuvre amounts to more than 400 works on various subjects including two dozen monographs. A significant portion of his later works were devoted to philosophy (Fig. 9.6).

9.4 Theodor Ziehen’s Philosophy

Ziehen published the second edition of his *Erkenntnistheorie* in two parts, the first in 1934 and the second in 1939 (Ziehen 1934, 1939). These two volumes include the most mature version of his philosophy. The first volume has the subtitle, *Allgemeine Grundlegung der Erkenntnistheorie. Spezielle Erkenntnistheorie der Empfindungstatsachen einschließlich Raumtheorie* [General Foundation of Epistemology. Special Epistemology of Sensations Including the Theory of Space]. The second volume is devoted to several related topics and is subtitled, *Zeittheorie. Wirklichkeitsproblem. Erkenntnistheorie der anorganischen Natur*

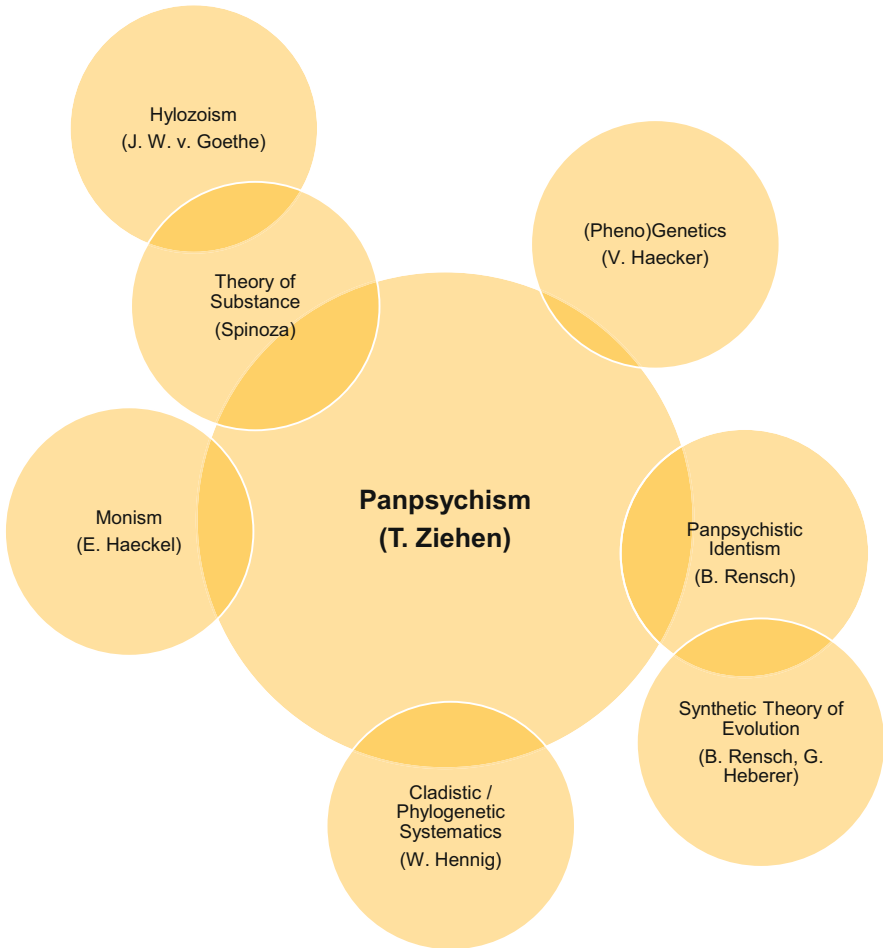


Fig. 9.6 Theodor Ziehen's conceptual context

(erkenntnistheoretische Grundlagen der Physik). Kausalität [Theory of Time. The Problem of Reality. Epistemology of the Inorganic Nature (Epistemological Foundations of Physics). Causality].

Right in the first sentence of the first volume, Ziehen formulates the very basic idea of his panpsychism, the so-called Gignomenal-principle: "The Given is the raw material of our entire knowledge" (Ziehen 1934, p. 1). The word "gignomenal" comes from the term "Gignomene", invented by Ziehen to describe "the Given" [das Gegebene]. In the first approximation, "the Given" is that which we experience, it is our sensations and perceptions: "Everything that is given is either sensation or perception. Initially, we get sensations; then they are followed by recollections and perceptions" (Ziehen 1907, p. 4).

Elsewhere in the text, Ziehen offers a clear and short definition of what he calls “the basic principle of idealism” [*idealistisches Grundprinzip*]: “The Given is only psychic, in an ordinary sense; the so-called material things are not given, they will be extrapolated [erschloßen]” (Ziehen 1922, p. 2). This means that “the given” does not simply reflect the material things out there; they will be constructed by our psyche.

For Ziehen, the “given” exists in past, present and future forms (Ziehen 1934, p. 7), and knowledge is, in the first approximation, “the Given” as processed by our mind. The “knowledge complexes” combined within a certain system (i.e. the system of knowledge) establish “science”. Epistemology is the most fundamental of all sciences and is, in fact, the “gignomenology”, i.e. the science of the given (Ibid., p. 8).

Another central notion of Ziehen’s epistemology is “the principle of immanence”. In 1915, in the *Grundlagen der Psychologie* (Foundations of Psychology), Ziehen briefly explained that “the principle of immanence” includes three logically interconnected claims: (1) It is impossible to establish a meaningful concept of type or kind [*Gattung*] covering all the given [*Gignomene—plur.*]; (2) it is impossible to distinguish gignomena² from non-gignomena; (3) it is impossible to imagine something that would be totally different from gignomena. In other words, the “immanent philosophy” is beyond the opposition between “physical” and “psychical”. The “immanent philosophy” rejects both the “metaphysical” and the “metapsychical” (Ziehen 1915, pp. 11–12). In 1934, Ziehen emphasized that “transcendent” knowledge is impossible since all knowledge derives from the “given”, i.e. we cannot trespass the boundaries of our own mind into the material world. Knowledge is therefore always immanent, and this is the core of the “immanence principle” (Ziehen 1934, p. 12). In Ziehen’s vocabulary, the word “immanent” describes that which can be derived from the “given” and does not essentially differ from it, i.e. that which is derived from the individual mind’s experiences and in its essence cannot be separated from these experiences. The “immanence principle” gives rise to the “positivist principle”, according to which series of sensations and perceptions relate to each other in ways that can be described as “laws”—indeed, the very notion of the “law” is of crucial importance for Ziehen. In this sense, then, epistemology is the science of immanent laws of the “given”. The “positivist” principle directs epistemology towards the obligatory search for such laws (Ibid., p. 16).

The “immanence principle” leads to “epistemological relativism”, which Ziehen articulates in the formula of cognition (*Erkenntnis*): $Erk = F(O)$, where *O* stands for object and *F* stands for “cognitive functions” [*Erkenntnisfunktionen*], i.e. the functions of a cognizing mind. The formula symbolizes the inaccessibility of the object for the cognizing mind, which is always dealing with “functions” processing information on objects out there. Knowledge is always based on available gignomena and

²One of Ziehen’s reasons for introducing the term *Gignomene* was to encompass the possibility of using plural and single forms of the “given”. In the following, we use *gignomena* for plural and *gignomenon* for a single form.

correspondingly is relative not only in relation to *F* but also in relation to *O* (Ziehen 1934, p. 19). It is important to stress that *F* only operates on objects of the mind (objects already existing in the mind); Ziehen identified this aspect of his thought with Berkeley's subjective idealism (Ziehen 1907, p. 7).

All gignomena are classified into sensation-, perception-, thought-, feeling- and will-gignomena (Ziehen 1934, pp. 25–26). Accordingly, gignomenology (epistemology) is subdivided into the epistemologies of sensation, perception, thought, feeling and the will. This is the counter-intuitive part of Ziehen's philosophy. If sensations and perceptions are direct conductors of the "given", then free will comes from within the individual; it is not given by the outer world. But for Ziehen, the "processes of willing" [*Willensvorgänge*] either can be traced back to all other forms of gignomena or are dependent on other forms of gignomena. This free-will paradox³ will be crucial also for Rensch's philosophy, but Rensch made his argument more straightforward by arguing that humans live in a lawful, deterministic world and that, in all probability, there is no such thing as free will (Rensch 1991, p. 151).

Another of Ziehen's ideas which became important for Rensch is the concept of reduction. Ziehen distinguishes all "given" (in sensations, perceptions, etc.) into a "reduced (causal) component" and "parallel component" (Ziehen 1934, p. 44). For example, our daily observations of a yellow disk (the sun) flying through the heavens do not itself suggest what sort of law lies behind its motion. This pure observation is the "parallel component" (so-called *N*-component) of a gignomenon.

Sensations are "parallel", because our subjective perceptions (e.g. yellow, green) run in parallel to, e.g. visual cortex. Ziehen illustrates this idea of causal and parallel lawfulness with two examples. The falling of a stone in proximity to a person causes a cascade of physiological reactions including the activation of the cerebral cortex. This cascade of reactions is repeatable and independent of individual sensations. This is an example of a causally lawful ("objective") process, which is reflected by "parallel" ("subjective") processes in my brain. The perception of a "blue sky" becoming "red" illustrates parallel lawfulness even better, because there is no "blue" nor "red" really out there, and the sky may appear blue or red for a variety of reasons. In any case, there is no causal relation connecting "blue" or "red" sensations; they just run in parallel to something extramental (in our terms). At the same time, my perception of "blue" or "red" cannot be explained in terms of physics, and cannot be equated with extramental processes. The way to "objective" knowledge Ziehen denoted by the term "reduction".

The "reduced or reduction component" of the "given"—the *R*-component—is akin to what we might think of as the ability to build abstract categories and to draw regularities based on observations. Ziehen considered the *R*-component "an objective component" of the "given", as opposed to the subjective *N*-component, which depends on the nervous system (Ziehen 1922, p. 6). The process of reduction is, in fact, the process of eliminating individual (subjective) sensations to arrive at a more

³Ziehen and Rensch were under Spinoza's influence; compare, e.g. with Spinoza, *Ethics*, Part 1, Th. 32, esp. Cor. 1, 2 (Spinoza 1996).

generalized picture of the world. The *R*-component in its ultimate form is science. Commenting on the above example of the sun, Ziehen wrote: “I decompound the sun experience in an *R*-component, which essentially corresponds to my scientific knowledge, and an *N*-component remaining completely outside of the scientific knowledge” (Ziehen 1934, p. 30). Blue sky, yellow sun, feelings of warmth and observations of sunsets belong to the *N*-components. The very name “reduction” appears because the discovery of regularities is the result of removing certain features of the “given”. For example, to come to the laws of optics, one should “eliminate” the colours (all these subjectively experienced as “blue”, “yellow”, etc.). Every gignomenon (everything “given”) can therefore be characterized by the formula, $G = R + N$ (Ziehen 1922, p. 6), where *G* means gignomena.

The above is, roughly, Ziehen’s epistemology. What kind of ontology did it presuppose? Ziehen was an explicit monist. But how does Ziehen’s epistemology relate to monism, which was so popular among German scientists at the time (Ziche 2000; Nöthlich et al. 2006; Hoßfeld 2013)? In attempting to bridge his epistemology and ontology, Ziehen asked whether *R*-components can actually exist without *N*-components. In other words, he wondered whether there are isolated *R*-components and *N*-components (Ziehen 1934, p. 49). Ziehen’s monism led him to regard as misguided the efforts of philosophers who divide everything existing into “psychic” and “physical” parts. Correspondingly, these philosophers are also obliged to ponder whether the “psychic” and the “physical” exist independently, i.e. whether both possess the status of “substance”, or whether they somehow depend on each other. The champions of the first view are “psychophysical dualists”, while the advocates of the second are “materialists” or “parallelists”. Ziehen rejects both dualism and materialism. Yet, he also rejects what he calls faked “identism” or “contrition-systems”. Examples of such seeming “identists” are, according to Ziehen, Spinoza and Fechner who initially accepted dualism, but later regretted it and proclaimed the identity of physical and psychical (Ibid. p. 47). Ziehen opposed to these views his own claim that all the “given” contains *R*- and *N*- components. They differ only and exclusively due to “the lawful relations” they are involved in. Ziehen expressed this aspect of his metaphysic in the formula: $G = R \dashv N$. The “given” is not split or separated into two components but changes according to *R*-laws or *N*-laws. Distinguishing between two components is thus a “nomistic” procedure. As to the hypothetical independent existence of the psychic and the physical, Ziehen emphasized that the “given” is all that exists and that *R*- and *N*-components exist only as far they are *in* the “given”. To exist means to be given. In colloquial language, Ziehen’s view can be expressed by saying that only the “psychic” exists, but this way of putting it is imprecise and misleading (Ibid., p. 48). In fact, *R*- and *N*-components are not even components; they are more accurately understood as *directions* in which the “given” changes. Correspondingly, the question can be reformulated in the following way: Which are primary, *R*-changes or *N*-changes? Do isolated *R*-changes or *N*-changes exist? It is with this question that Ziehen’s philosophy meets his psychology and psychiatry, because he insists that it can be answered only with empirical studies and observations (Ibid., p. 50). Based on his own scientific work, Ziehen concluded that neither *R*-changes nor *N*-changes exist independently. Although one can speak

of molecules and atoms, which cannot be immediately given in sensations, atoms and molecules always act to *induce* sensation, and thus they are never completely absent therein. The existence of isolated *R*-changes is therefore improbable, although logically not prohibited. The experiments and observations of neuropathology, Ziehen claimed, disprove the independent existence of *N*-changes.

Ziehen called the champions of the philosophical view that *R*-changes cannot in principle exist without *N*-changes “hylozoists” or “hylopsychists”, and counts among them Spinoza, Fechner, Spencer and Haeckel. The major mistake of hylozoists is in thinking there is a clear difference between psychic and material “things”, whereas according to Ziehen, “the bearer of all changes is completely neutral, i.e., it is neither psychic nor physical and only the laws of changes in two directions can be distinguished” (Ziehen 1934, p. 51). Conscious of drawing on previous forms of monism, Ziehen used the term “neutral monism” to describe the idea that the “ultimate something” [*letztes Etwas, zugrunde Liegende*] is “neutral” in this sense, although he expressed reservations about its explanatory usefulness: “nothing is achieved by bald proclamations of such neutrality or identity” (Ziehen 1939, p. 124). Ziehen claimed that Spencer spoke of “internal” and “external” as corresponding to “soul” and “matter”. Other “identists” argued likewise. So, instead of true identism, they actually proposed the existence of three components: internal, external and a hypothetical observer. Ziehen believed he could replace this dualist (actually trialist) view with his own, according to which the “bearer” of the changes is a genuine unity (Ziehen 1934, p. 51). The term “identism” reflects the idea that the “bearer” remains self-identical despite changes. At the same time, Ziehen was against the radical view that every smallest “single unity” (an *R*-unity) is connected to a corresponding “soul” (*N*-unity); there are no “atom-souls”, “electron-souls”, etc. as Ernst Haeckel would suggest (Ziehen 1939, p. 113). Rather, there are complex entities (complexes of atoms) connected to a “parallel component” (very roughly a “soul” in colloquial language).

The most difficult aspect of Ziehen’s philosophy is the transition from his epistemology to his ontology. The idea of the “given” alone and the idea of ensouled “complex entities” alone seem to be comprehensible. However, the idea of “true” identism—his way of avoiding dualism—is rather obscure. The problem is that Ziehen’s ontology was not developed by him explicitly, on the same evidentiary basis as empirical epistemology: rather, Ziehen’s ontology followed logically from his epistemology.

In a paper published in 1924, he tried to make the link between his epistemology and monistic ontology more explicit (Ziehen 1924). Ziehen pointed out that the so-called idealism is misguided in that it claims that only the psyche (“spirit” in Berkley’s terms) is the bearer of the psychic [*Psychisches als Träger des Psychischen*], the same view known as “psychomonism”. According to Ziehen, this view is wrong because it presupposes a “material-psychic” dichotomy as if “psychic” referred to a separate kind of reality. Ziehen appealed to the example of the sun: in the sensation of a yellow sun disk, one can distinguish “causal” (same as *R*-components) and “parallel” (same as *N*-components) elements. Here, the word “causal” refers to a chain of events known from physics and physiology, in this case

the chemico-physical composition of the sun, the light waves issuing therefrom, the physiological reaction of the visual cortex and so on. “Parallel” refers to the subjective appearance of the sun as yellow disk of a certain size. This is the point where Ziehen makes an ontological transition: “Finally our concept becomes of special significance because, along with many great philosophers (e.g., Spinoza, Fechner, Paulsen), we ascribe parallel processes (in ordinary terminology, ‘ensoulment’ [Beseelung – auth.]) to all the given. Only with this step to hylopsychism is the unity of the worldview rendered complete”.⁴ The body-soul problem appears then, Ziehen argued, in a different way. If there are no two distinct substances composing the world, then both materialism and spiritualism are wrong. Both brain physiology and brain pathology demonstrated that there are consistent relationships between the cerebral cortex and psychic processes, but sensations and thoughts do not mysteriously dwell within or outside of cortex cells: “We claim that these cells or, better to say, their reductions remain in dichotomous lawful relations to the rest of the world and to each other” (Ziehen 1924). The watch is not connected to the sense of time by a special mechanism; time and watch also do not merely run in parallel, either. There is only one watch and one dial-plate, Ziehen argued, but the clockwork runs in accord with two different laws, whereas the dial-plate (our mind) displays the whole effect as one [*Gesamteffekt*].

In summary, Ziehen’s “true” ontological identism follows from his epistemology, which in turn is connected to his work in psychology and psychiatry. All these disciplines (epistemology, ontology, psychology and psychiatry as part of experimental medicine) worked together for Ziehen to establish a monist and identist worldview. Ziehen’s obsession with laws (parallel laws, causal laws, etc.) led him to a view known as nomotheism, i.e. an identification of all-embracing lawfulness with divinity. The latter elements of his philosophy are strongly reminiscent of Haeckel’s Gott-Natur (God-Nature) as the idea that the totality of natural laws will be identified with “God”. Ziehen’s monism, identism, his emphasis on laws and the aura of experimentally provable philosophy attracted German natural scientists, and especially Rensch (Fig. 9.7).

9.5 Bernhard Rensch’s Panpsychistic Identism as a Philosophy of Universal Evolutionism

Bernhard Rensch was one of the best-known German “architects” of the evolutionary synthesis, and he crucially contributed to the growth of Darwinism in Germany and worldwide. At the same time, Rensch created an exotic and sophisticated

⁴German original: “Eine bedeutsame Erweiterung erfährt unsere Auffassung schließlich noch dadurch, daß wir mit vielen großen Philosophen Parallelprozesse—in der üblichen Terminologie ‘Beseelung’—allem Gegebenen zuschreiben. Erst mit diesem Schritt zum Hylopsychismus wird die Einheitlichkeit des Weltbildes vollständig” (Ziehen 1924).

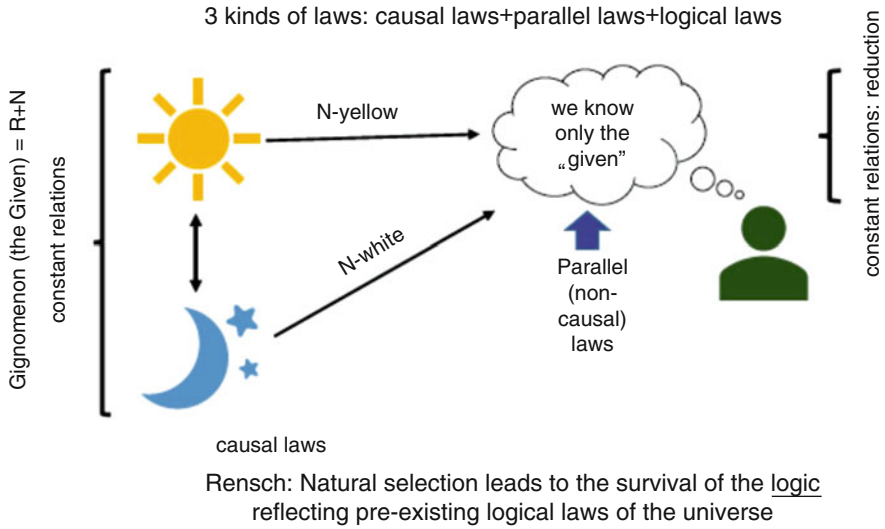


Fig. 9.7 The schematic representation of Ziehen’s philosophy

evolutionary metaphysics, which became an integral part of his universal evolutionism. Rensch’s philosophy, which he called *panpsychistic identism* (Rensch 1988, p. 36), was a version of monism; thus, Rensch followed in Ernst Haeckel’s footsteps not only in establishing Darwinian doctrine but also in promoting the monist worldview. This made Rensch a philosophical opponent of Ernst Mayr as, according to the latter, Rensch was “forced to adapt pan-psychic or hylozoic theories of matter” by denying Mayr’s emergentism (Mayr 1982, p. 64).

Rensch was not a selectionist throughout his whole career. Until the end of the 1930s, Rensch was a neo-Lamarckian—he maintained that major macroevolutionary transitions can be explained by the direct adaptation of organisms to their environment (Rensch 1933, pp. 48, 58). At that time, Rensch saw natural selection as an auxiliary mechanism of evolution, but on no account the only or major directing force thereof (Ibid., p. 54). The Lamarckian movement in Germany was from the very beginning tightly united with orthogenesis and the idea of progressive evolution. Orthogenesis was an issue for Rensch already in his early neo-Lamarckian publications and remained central after his “selectionist turn”. Yet, if in the “pre-synthetic” period Rensch was ready to accept the concept of directed evolution, in the “synthetic” period, he strongly rejected it. Rensch, along with other champions of the Modern Synthesis including, for example, the American paleontologist George G. Simpson, was convinced that macroevolution can be explained without appealing to saltationism and orthogenesis and that neo-Lamarckian mechanisms are thus redundant to such explanations. Instead, they claimed that paleontological data should be connected with the new explanatory paradigms appearing in the fields of genetics and microsystematics (Mayr 1982, p. 607). However, Rensch never entirely abandoned the idea of progressive and directed evolution. His philosophy became an

asylum for the elements of orthogenesis which he banned from the evolutionary theory, in particular the idea of compulsory evolutionary ascent: “The entire *Höherentwicklung* (anagenesis) or biological ascent [*biologischer Aufstieg*] of organisms is therefore for Rensch inevitable [*zwangsläufig*]” (Overhage 1959, p. 75).

The first voluminous paper in which Rensch considers selectionism as a serious alternative to neo-Lamarckism was the *Typen der Artbildung* (The Types of Speciation) (Rensch 1939). His arguments in this article appeared to be quite “synthetic” since he claimed that random mutations and selection can be generally seen as sufficient to explain major transitions in evolution and that by elucidating the “higher categories” and “special regularities of paleontology”, there is no need for other explanatory patterns. There is no reason, Rensch argued, for postulating another set of totally hypothetical laws other than those used to explain microevolution.

Rensch’s writings on evolutionary biology between 1929 and 1947 demonstrate the astonishing continuity in topics, methodology and empirical generalizations despite the shift in his understanding of evolutionary mechanisms. The continuity of Rensch’s theoretical system can to some extent be explained by the guiding role played by the general philosophical principles explicitly and implicitly underlying the entire system (Levit et al. 2008).

Rensch made his philosophy explicit to the international scientific community in his best known “synthetic” book, *Neuere Probleme der Abstammungslehre: Die Transspezifische Evolution* (Rensch 1947). The book, which became known in the English-speaking world as *Evolution Above the Species Level*, was written in Prague during the Second World War. The draft of the contents of the book found in the *Archives of the Academy of Sciences in Prague* shows that Rensch conceived his work from the very beginning as a deep theoretical investigation of evolution with explicit methodological and philosophical reflections (Levit et al. 2008). As RG Delisle has pointed out, Rensch’s book “is often taken to propound the view that macroevolutionary events are explained by microevolutionary processes. It has perhaps not been sufficiently realized, however, that the microevolution/macroevolution equation in his conception only constitutes the intermediate link of a gigantic and universal causal chain binding together all the cosmic entities, from microphysical phenomena all the way up to the most complex life forms” (Delisle 2009). Already in the first edition of the book, Rensch abundantly cited Theodor Ziehen, his major philosophical inspiration. In this text, Ziehen is mentioned more often than Darwin. In his autobiography, Rensch recalls that he thoroughly—“chapter for chapter”—studied Ziehen’s double-volume *Erkenntnistheorie* (Ziehen 1934, 1939) in 1942, right before putting together the *Abstammungslehre* (Rensch 1979, p. 106).

From the standpoint of evolutionary theory, the objective of Rensch’s text was to substantiate the Darwinian theory of macroevolution. Truly original also was the line of argumentation in favour of universal selectionism he developed as a contribution to epistemology, philosophy of science and metaphysics, and which he wrote under the influence of Ziehen. In subsequent books, Rensch developed this initial concept into a full-blown philosophical system, which laid the foundation for his evolutionary views.

In one of his latest works, *Probleme genereller Determiniertheit allen Geschehens* (The Problems of the general Determinacy of all Occurrences), Rensch presented his *pantheistic* metaphysics as a holistic and scientifically based worldview (Rensch 1988, p. 11). In constructing his philosophy, Rensch proceeded from the general epistemological assumption that “the only entirely reliable foundation for a philosophical worldview is the indisputable reality [*Wirklichkeit*] of the phenomena [...] of consciousness” (Rensch 1988, p. 11). This sounds like a repetition of Ziehen’s “immanence principle”, but Rensch goes further and provides his epistemology with an evolutionary explanation. The human ability to analyse our experience is an inherited feature acquired over the course of evolutionary history. The essential human ability to “draw conclusions” can be explained by the ways in which the human mental apparatus is adapted to the regularities of the external world. Our advanced degree of adaptation to the lawfulness of the “extra-mental” reality forms the foundation of the correlation between the mental and extra-mental worlds. Rensch makes Ziehen’s philosophy less exotic by claiming that there is, indeed, only one single reality, but one with two fundamentally different aspects: the mental and the material.

One of Rensch’s central philosophical claims is that both the organic and the inorganic worlds are causally determined—there is no such thing as an acausal process (Rensch 1988, pp. 15–16). Insofar as natural selection is a deterministic mechanism, Rensch thus sees it as the major factor determining organismic evolution. Indeed, he claims that biological progress can be fully explained in causal terms of Darwinian selectionism, although he admits the influence of stochastic events such as random mutations within the selection process.

The evolution of human cultures proceeds mostly on the level of non-heritable characters, Rensch continues, and it is important to distinguish between psychic and neurophysiological phenomena. Rensch refers to Karl Popper’s concept of the relationship between psychic and neurophysiological as an example of a *dualistic concept*. Popper assumed that there are two principally different essences [*Seinswesen*]: psychic phenomena, on the one hand, and the neurophysiological processes on the other. Rensch formulates his own position in contrast to Popper’s dualism. If purely psychic phenomena, for example, volition, could influence muscle contractions, Rensch argues, it would violate the law of energy conservation making the purely biochemical explanation of muscle contractions impossible (Rensch 1988, p. 34). Another possibility would be to assume that mental [*geistige*] processes run in parallel to events in the material world. This position Rensch labels *psychological parallelism*. Yet, psychological parallelism cannot explain why physiologically identical brain processes can cause various mental effects.

Following Ziehen, Rensch argued that for a human being, the only indisputable objects are his/her own psychic phenomena resulting from immediate experiences: perceptions, imaginations, feelings and thoughts. It is only through analysis of these experiences that we come to develop concepts of an extra-mental world, which appears as a visible and testable reality. Matter appears as “the ultimate something”, which will perhaps in the future be described only in terms of interactions of various forces, causal chains, and fundamental constants. Rensch appealed to Ziehen’s

psycho-physiological epistemology to introduce a “monistic principle” (Rensch 1971, p. 29). As with any kind of philosophical monism, the “monistic principle” constitutes an ultimate, ontologically definable reality which cannot be multiplied or decomposed into further elements. Rensch argued that the reduction of elementary mental features (sensations and perceptions) to their foundations will inevitably lead to the concept of “the ultimate something” that underlies the world and cannot be decomposed into finer elements (Rensch 1988, p. 35). According to Rensch, one can appeal to Spinoza’s concept of substance in order to avoid dualism and to give a name to this “ultimate something”.

Along these lines, Rensch arrived at his concept of *psychophysical identism* (Rensch 1988, p. 36). He presented this concept for the first time in the *Abstammungslehre* (1947), although at that time he employed another term (with the same meaning) *hylopsychism*. Quite in accord with Ziehen, Rensch claimed: “We would like to point out here once more that this worldview is an idealistic one, since what is primarily given to us is the ‘psychic’; there is definitely no opposition between subject and object, matter and soul; even the abstract reductionist world [*Reduktwelt*] of natural scientists should not be searched for outside of the ‘conscious’ [*Bewußten*]” (Rensch 1947, p. 372).

In the mature philosophical text, *Biophilosophie* (Rensch 1968; English: 1971), Rensch converted Ziehen’s identism into the so-called “identistic” foundation of the philosophy of biology and coined the term “panpsychistic-identical or polynomistic worldview”. Rensch formulated two basic “facts” constituting panpsychistic identism: “(1) The only reality of which we can be absolutely certain relates to experienced phenomena, which include sensations, mental images, feelings, and volitional processes as a whole. (2) Man does not consist of two separate components—matter and mind, or body and soul, but represents an indivisible psycho-physical unity” (Rensch 1971, p. 299). Both claims reveal the strong influence of Ziehen, but Rensch approached the second claim in a somewhat different manner than did his predecessor. Rensch even acknowledged that on this issue, his view was at odds with that of Ziehen (Rensch 1988, p. 36). As Rensch commented in his autobiography, at the time of the third edition of the *Abstammungslehre* (Rensch 1970), he had departed from Ziehen’s idea of “proto-psyche” as an immanent property of matter in favour of the view that the “psychic” is the very essence of everything “material” (Rensch 1979, p. 184). Rensch sought to distance himself from the slightest shadow of dualism, and to this end he discovered the need of a “neutral observer” within his concept impossible in Ziehen’s world. Despite this and several other discrepancies, Rensch’s philosophical thought always remained within Ziehen’s paradigm. One may wonder whether Rensch’s major claims are self-contradictory in as far as they conflict with Ziehen’s epistemology and ontology, but such issues lie outside the scope of this paper. Our objective is just to demonstrate the great impact of Ziehen’s philosophy on the central figure of the second Darwinian revolution, and not to go into detailed analysis of Rensch’s epistemological views.

Rensch’s own panpsychism, which grew out of Ziehen’s panpsychism, led him to conclusions which proved crucial for the further development of his version of

evolutionism. First of all, he formulated the hypothesis of psycho-phylogeny proving that all psychic abilities develop gradually in the course of biological evolution. Rensch noticed that even protists react to [electrical, physical, etc.] impulses similarly to how organisms with a nervous system react to the same impulses. But if we admit that organisms developed psychic abilities continuously over the entire course of evolutionary history, why should we ascribe “the Psychic” only to the first stages of *biological* evolution without looking for its roots in the geological and astronomic pre-history of evolution? Rensch claimed that we can go down to the level of proto-phenomena (preceding any kind of material evolution, whether abiotic or biological) which underlie the phenomenological nature of the material world: “the proto-phenomena precede even the inanimate pre-stages of phenomena, and respectively matter is of a *proto-phenomenal nature*” (Rensch 1972, p. 406). In other words, protopsychic properties are immanent to matter. *Nihil est in intellectu, quod non fuerit in sensu* can therefore be substantiated in phylogenetic terms, Rensch concluded. Rensch’s identism is thus a kind of monism, which was inspired by Ziehen.

Rensch’s monist worldview led him to regard nature as deterministic. This type of monism brought about Rensch’s determinism. Postulating the pre-phenomenal nature of matter had the corollary that every particle of perceivable reality became supplied with a tiny unit of “intelligence”. Since this intelligence is an essential attribute of the Universe, the evolution of the Universe implies a sort of pre-programmed movement in the direction of human-like intelligence. This aspect of Rensch’s view is strongly reminiscent of Teilhard de Chardin, who saw the Universe as a “closed quantum”, where nothing can appear which did not already exist. Teilhard also saw biological evolution as a continuation of pre-biological evolution, but he went further than Rensch would ever go by creating a theology of evolution. To make his universal determinism compatible with the natural scientific worldview, Rensch concealed his obviously teleological concept within the paradigm of universal selectionism, since selectionism was widely accepted and respected and was considered “free” of any teleology.

Rensch’s identism-based selectionism is universal, because it penetrates all aspects of evolution: “On the foundation of such panpsychic identism not only the evolution of the Solar System, the Earth, the plants and animals as well as humans can be presented as a continuous process but also the evolution of human and animal mental abilities” (Rensch 1991, p. 258).⁵ Even cultural evolution, Rensch asserted, is directed by natural selection, with the only difference being that *genetically non-heritable* features play the major role therein. For Rensch, the primary factor responsible for advancing human civilization over the course of history is science, which is driven by the selection process as well. The evolution of human cultures has

⁵German original: “Auf der Grundlage eines solchen panpsychistischen Identismus stellt sich also nicht nur die Evolution des Sonnensystems, der Erde, der Pflanzen und Tiere sowie des Menschen, sondern auch der tierischen und menschlichen geistigen Fähigkeiten als ein einheitlicher kontinuierlicher Ablauf dar [...]” (Rensch 1991, p. 258).

been determined, first of all, “by *growing scientific knowledge*⁶ bringing about new techniques and social institutions”, while scientific knowledge itself makes progress due to the positive selection of concepts (Rensch 1988, p. 116).

The same is true for the religious evolution, Rensch claimed. Religion is a kind of explanation for external world events developed by humans, who progressively exclude “improbable” explanations in favour of more consistent and “probable” ones: “In fact, the selection of various ways of thinking [*Denkmöglichkeiten*] took place”, Rensch concludes (1988, p. 61). The evolution of religious beliefs is a process determined psychically and physiologically and proceeding in a way analogous to biological evolution. Again, religious beliefs are not genetically heritable—instead, the mechanism of biological heredity is replaced by the transmission of intellectual heritages. The law-governed [*Regelhaftigkeit*] progress⁷ of religious beliefs manifests itself in the adaptation of beliefs to the general growth of knowledge and an increase of spirituality [*Vergeistigung*] in religious systems. For example, the majority of polytheistic religions evolved towards monotheism. The great religious systems, once appeared, began splitting into sub-systems, sects and so on, showing also in this respect a clear parallelism to organic evolution (Rensch 1988, p. 116).

In sum, Rensch advocated for a kind of all-embracing evolutionism and selectionism. Natural selection is the major source of lawfulness in evolution, and although it differs from the lawfulness of physics, “it is nevertheless possible to characterize evolutionary regularities [*Regelhaftigkeiten*] as laws [*Gesetzlichkeiten*]” (Rensch, 1991, p. 107). Indeed, Rensch insists that the origin of humans from their ape-like ancestors “was presumably a lawfully determined [*gesetzmäßig bedingter*] process” (Rensch 1991, p. 225). Rensch’s universal selectionism is thus packed into his universal determinism. He does not reduce his concept of “lawfulness” to the vulgar understanding of determinism and coins the term, “polynomic determination”, to describe his own view. Polynomic determination implies that the whole range of biological, physical, chemical, social and other natural laws control the process of evolution, and although the interactions of these laws with one another bring about seemingly stochastic events, in fact, all such events can be explicated in terms of the intersection of lawful processes. Correspondingly, there is a significant chance that organic and cultural evolution would occur on other planets with comparable chemico-physical conditions to those on Earth, and the organisms on such planets would and evolve in a comparable way (Rensch 1991, p. 108). Thus, Rensch’s anthropocentric determinism goes hand in hand with universal selectionism (Fig. 9.8).

⁶Rensch’s italics.

⁷Here, Rensch employs the same term, “Höherentwicklung”, which was central for discussion about evolutionary progress in German lands in the first half of the twentieth century.

Bernhard Rensch: The Timeline

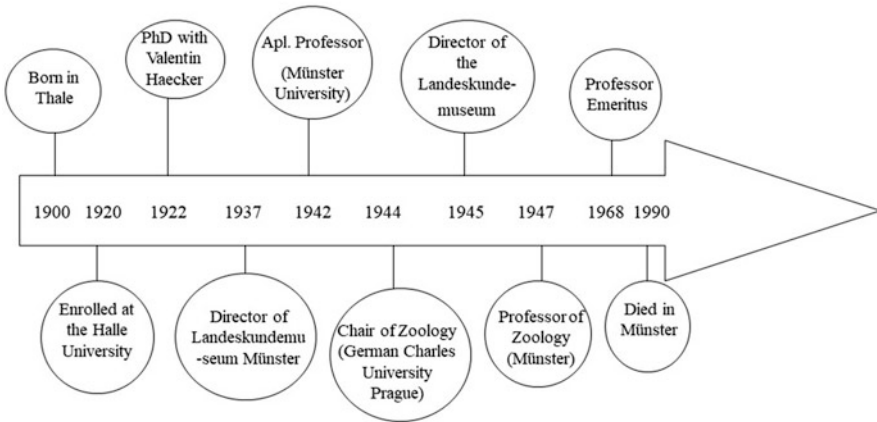


Fig. 9.8 The timeline of Bernhard Rensch

9.6 Once Again: Why Was Bernhard Rensch So Fascinated by Theodor Ziehen?

Rensch was not the only German biologist influenced by Ziehen. As O. Rieppel has shown, the philosophical foundation of Willi Hennig's systematics is based on the work of Ziehen, Rudolf Carnap, Ludwig von Bertalanffy and Hugo Dingler (Rieppel 2006, 2007). Ziehen's cooperation with one of the forerunners of experimental biology, genetics and developmental physiology and a former rector of the University of Halle, Valentin Haecker, is also well-known. Yet, among the biologists who made use of Ziehen's philosophical work, none did so more deeply than Rensch. Why did Rensch choose Ziehen's epistemology and not other philosophies compatible with synthetic evolutionism? There were several philosophers at that time who were influential among German evolutionists who could have potentially taken Ziehen's place or whose ideas Rensch could have combined with Ziehen's. The most obvious candidate for this role would be the "official" philosopher of German Modern Synthesis, Hugo Dingler. Why did Rensch completely ignore Dingler and concentrate only on Ziehen?

Rensch cited Dingler neither in the first and second edition of the *Abstammungslehre* (Rensch 1947, 1954) nor in the *Biophilosophie* (Rensch 1968, 1971) or autobiography (Rensch 1979). Dingler's views were incompatible with Rensch's for two main reasons. First, Dingler was a supporter of national socialism and in that sense was close to Heberer. Dingler entered the SS as a "promoting member" in 1933, but was unable to become a member of NSDAP until 1940, as he had to wait for Hitler to personally grant him membership since Dingler had been a Freemason in the 1920s (Junker and Hossfeld 2002). Rensch, on the other hand, belonged to the liberal wing of German evolutionists and was not a member of any national socialist organizations. Second, Dingler's ideas were unacceptable to

Rensch because Dingler espoused a strong version of methodological voluntarism which Carnap labelled “radical conventionalism” (Rieppel 2016, p. 266). As Rieppel has put it: “At the core of Dingler’s philosophy of science stands instead a deductively structured theoretical system based strictly on universals, what Dingler called the world of ideas of ancient Greek philosophers” (Rieppel 2012). While Dingler “firmly rejected the possibility of a rational justification of inductive inference” (Rieppel 2012), Rensch’s reasoning was explicitly based on inductive inferences. Dingler’s methodological approach was thus entirely alien to Rensch. As Rensch put it: “It is by induction that science at first usually proceeds to the ordering of statements, in other words to classification” (Rensch 1971, p. 11).

Another potential candidate for the role of Rensch’s major philosophical inspiration was Ernst Mach, who, similarly to Ziehen, championed “physiological psychology” and monism.⁸ This suffices to explain Rensch’s general interest in Mach, but it is worth asking why Rensch still preferred Ziehen over him. The answer lies partly in Rensch’s own understanding of philosophy philosophical trajectories. Rensch thought of Ziehen’s work as the culmination of a tradition which included Mach, Avenarius and other related philosophers. Thus, Rensch read these philosophers through Ziehen’s eyes, as it were. He often counted them among Ziehen’s theoretical predecessors, sometimes mentioning that psychism, consciencism, hylozoism and the empiriocriticism of Avenarius only “represent variations or combinations of the theories mentioned” in Ziehen (Rensch 1971, p. 159). It is noteworthy that Mach himself seemed to hold mixed opinions about Ziehen. For example, in the introduction to the Russian edition of his “Analysis of sensations”, first published in 1908 and later mentioned by Lenin, Mach wrote that at the end of the 1880s, after he had come into contact with the works of Avenarius (1843–1996), Wilhelm Schuppe (1836–1913) and Ziehen, he concluded that they were each following very close—if not identical—paths (Mach 2005, p. 43). Yet, in a private letter to the Austrian philosopher Wilhelm Jerusalem (1854–1923) on 1 July 1915, Mach was rather sceptical about Ziehen’s philosophical achievements: “I have partly read Ziehen⁹ and am of your opinion about him. For the branding together [Umstempelung] of Plato and Goethe, if I may be allowed to give an opinion, strikes me as rather comical” (Blackmore et al. 2001, p. 225). However, it was exactly this “synthesis” of Plato and Goethe that made Ziehen so popular among German evolutionists and especially with Rensch.

Rensch’s belief that Mach was Ziehen’s philosophical predecessor is visible already in the first edition of *Abstammungslehre* (Rensch 1947). Rensch emphasized that there are a few philosophers open to scientific questions and able to combine natural science, psychology and epistemology. The tradition he is explicitly leaning on here includes philosophers like Spinoza, Descartes, Locke, Berkley, Hume, Kant, Spencer and Mach, but “especially Theodor Ziehen” (Rensch 1947, p. 332). Accordingly, he read those philosophers with Ziehen in mind. For example, when writing

⁸<https://plato.stanford.edu/entries/ernst-mach/>

⁹With all probability, he read Ziehen’s *Die Grundlagen der Psychologie* (1915).

about Kant's "appearances" [*Erscheinungen*], Rensch immediately comments that they are the same as Ziehen's gignomena (Ibid., p. 333). But to return to the question, why "especially Ziehen"?

The "special" status Rensch granted Ziehen is illustrated by the fact that the whole tenth chapter of the *Abstammungslehre*, "Evolution of the Phenomena of Consciousness" [*Evolution der Bewusstseinserscheinungen*] (Rensch 1947, pp. 331–373), is written under the immediate and very strong influence of Ziehen. In the second sentence of the initial section of the chapter (following the introduction) labelled "B. Epistemological foundations", Rensch introduced Ziehen's most basic notion of "the given", and later in the text, the whole section C. bears the title, "Evolutions of the Gignomena". Here, Rensch borrowed the term most central to Ziehen's thought, a term which nobody else used in the entire history of philosophy. Rensch also often cited the most detailed and obscure parts of Ziehen's epistemology (Ziehen 1934, 1939). Furthermore, Rensch shared Ziehen's major claim that epistemology *must* proceed from "the given" and that there is no other way to build an applicable epistemology. He uses this claim to justify his rejection of psychophysical dualism and to proclaim the "animatedness" [*Allbeseelung*] of the all matter—with identism being the more sophisticated version of this view. Rensch articulated this latter component of his view even more strongly than Ziehen did his, but the whole argumentative structure comes from Ziehen, although Rensch presents it more clearly.

In fact, Rensch borrowed all the crucial notions of Ziehen's epistemology. He speaks not only of "gignomena" but also of "parallel components" (Rensch 1947, pp. 370–371) and "processes of reduction" (Ibid. p. 334) following in the steps of Ziehen's panpsychism. A new dimension Rensch adds to Ziehen's philosophy is evolution. Rensch spent more than 40 pages of the *Abstammungslehre* analysing the "evolution of the gignomena" and "parallel processes and somatic evolution" (Ibid., pp. 340, 370). The compatibility of universal evolutionism with Ziehen's universal panpsychism is the major reason why Ziehen's thought was "especially" well-suited to serve as the foundation of Rensch's methodology. Ziehen's panpsychism was fully compatible with Rensch's universal evolutionism because Ziehen developed a terminology which facilitated the detachment of the "psychic" or "conscious" from the "human" and the conversion of the former into an abstract and universal category similar to energy or matter. In that sense, Rensch completed Ernst Haeckel's mission by looking for a *Weltseele* (a World's Soul). We should emphasize here that in the subsequent two editions of the *Abstammungslehre* (1954, 1972), Rensch only strengthened the "philosophical" part of his evolutionary theory by constantly keeping Ziehen in the forefront of philosophical chapters. This constitutes more strong evidence in favour of seeing Ziehen's epistemology as a necessary integrative component of Rensch's theory of evolution.

There is also a more subtle argument explaining Rensch's interest in Ziehen. As we have argued elsewhere (Levit et al. 2008), the most characteristic concept in Rensch's monism, which he acquired from the German *Naturphilosophie* tradition and which he shared with Haeckel, was anthropocentrism. Yet, the strict synthetic selectionism adapted by Rensch in the mid-1930s presupposed that evolution has no

orthogenetic characteristics, i.e. no pre-programmed directionality, and is a purely stochastic process. In order to preserve the anthropocentricity of the tradition Rensch belonged to, he transplanted the idea of the directionality of evolution from the world of phenomena into the pre-phenomenal nature of things. The evolution of the whole universe became a directed process, but *biological* evolution *sensu strictu* remained stochastic and directed only by natural selection. Ziehen’s version of “identism” or “neutralist monism” was most compatible with this philosophical undertaking.

A logical consequence of Ziehen’s panpsychism and identism for Rensch was “the idea that the extramental world is structured according to the laws of logic” so that the very ability to think logically becomes an evolutionary adaptation to that extra-mental world (Rieppel 2007). Another crucial consequence of Ziehen’s influence on Rensch was the latter’s tendency to see “laws” everywhere in biological and social evolution. To develop a completely law-based worldview was one of the declared objectives and cornerstones of Ziehen’s philosophy. His “nomotheism” as an identification of God with lawfulness (Gabriel 2004) brings Ziehen, again, close to Haeckel. We can therefore characterize Ziehen as a philosophical “catalyser” of monist evolutionary biology.

9.7 Conclusions

Ziehen was a well-known psychiatrist and an obscure philosopher who left almost no traces in the history of philosophy itself, but whose epistemology enjoyed a significant influence within German evolutionary biology. Our hypothesis is that Ziehen became a visible figure in evolutionary theory mostly because German biology was fundamentally guided by the philosophy of monism. Monism was a characteristic feature of the German tradition of evolutionary biology, and was not as prominent in other scientific cultures (Levit and Hossfeld 2017). Both of the most important figures of the first and the second Darwinian revolutions in Germany (Haeckel and Rensch) were explicit monists. Monism and evolutionary theory were, for Haeckel, parts of the same research program—the “monistic doctrine of evolution” (*monistischen Entwicklungslehre*)—which ultimately aimed at unifying science and religion on a biological foundation (Hossfeld 2010; see also Levit & Hossfeld, first contribution in this volume). Rensch, being a major German “co-architect” of the evolutionary synthesis, developed his own version of synthetic Darwinism into an all-embracing metaphysical system based on a kind of Spinozism situated within the same tradition as Haeckel’s monism. Ziehen became Rensch’s major philosophical inspiration because Ziehen’s specific version of monism was convertible into Rensch’s panpsychistic identism, which in its turn served as the foundation of his universal selectionism and evolutionism.

Ziehen’s obsession with “laws” also heavily influenced Rensch’s thought. Indeed, the very idea of “the law” was ubiquitous in Ziehen’s work and remerged prominently in Rensch’s philosophy as well. However, the majority of Rensch’s “laws” were not seen as such by other evolutionary biologists (e.g. Mayr 1982,

Fig. 9.9 Portrait of Bernhard Rensch, 1954, presented to Gerhard Heberer (Archive of Gerhard Heberer in private archive of Uwe Hossfeld)



p. 37). Rensch's tendency to elevate rules and regularities to the level of laws was a consequence of his philosophical worldview and brings his biological universalism close to that of Ernst Haeckel, the crucial figure of the first Darwinian Revolution in Germany (Fig. 9.9).

Rensch's philosophy was not the "philosophy" of a retired biologist but was instead the core of his entire theoretical system. As our archival research and textual analysis demonstrates, Rensch was from the very beginning convinced that his major "synthetic" book, *Evolution Above the species level*, must include a "philosophical" part. Rensch's all-penetrating nomological selectionism was for him an instrument for establishing a monist agenda and solving the mind-body issue. Rensch's theoretical system therefore gave natural selection a role both crucial and subordinate. In the realm of empirically explicable phenomena, it was irreplaceable, but on a more fundamental metaphysical (metatheoretical) level, it served merely as a tool for drawing the determinist picture of the universe. Rensch's monism and the idea of "polynomic determination" turned out to be a selectionist version of the fundamental idea of directionality in evolution which, on the surface, was formulated in terms of the Modern Synthesis. In fact, however, "Rensch's determinism was a logical consequence of his panprotopsychnistic identism" (Ruschmeier 1999, p. 171). In other words, Rensch established a fundamental and logically coherent metaphysics which subordinated to itself all "lower-level" (i.e. more empirical) theories, including selectionism.

Rensch's metaphysics allowed him to preserve the directedness of evolution while simultaneously advocating for all the basic postulates of the Modern Synthesis, which explicitly rule out orthogenesis. Accepting random variation means that evolution loses its orthogenetic characteristics and becomes a stochastic process. In order to preserve the anthropocentricity of the tradition he belonged to, Rensch removed orthogenesis from the world of phenomena and placed it into the pre-phenomenal nature of things. It is not just by chance that he compared his version of identism to Averroes' concept of *natura naturans*, nor that he appealed to Spinoza already in the first edition (1947) of the *Neuere Probleme*. As Rensch

puts it: “The evolving forms are substantiated already in the essence of the ‘matter’ and the lawfulness of the world” (Rensch 1991, p. 528).

Acknowledgements We appreciate suggestions made by Prof. Ian G. Stewart (Halifax, Canada) during his stay at Jena University as an Erasmus-Plus Professor. We are thankful to Dr. Thomas Bach from Ernst-Haeckel-House (Jena, Germany) for providing us with letters of Theodor Ziehen to Ernst Haeckel; Prof. Dmitry Prokudin (St. Petersburg State University, Russia) for establishing citation diagrams; Dr. Alexander Lvov (St. Petersburg State University, Russia) for providing insightful philosophical comments; and Dr. Luise Knoblich (Jena, Germany) for designing visual images.

Cameron Yetman (Canada) contributed a lot to establishing the final version of this paper.

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