“Mnemism”: Memory, Evolution, and the Extended Unconscious

in EugenBleuler’sTheory ofHuman Nature

Cheryl A. Logan[[1]](#footnote-1)

“Everything that lives maintains itself through memory.” Eugen Bleuler

In 1905, Eugen Bleuler recounted a story from his youth. As a child he noticed that when he tore the legs off of a daddy-longlegs spider, its legs twitched well after they were separated. This was a source of amusement until one day when his mother explained that only “evil scoundrels” tore spiders’ legs off just to watch them twitch. Bleuler didn’t think himself a scoundrel, so he felt ashamed that he had caused the spiders’ torment (Bleuler, 1905, p. 3). Years later the memory plagued him.

Bleuler, famed psychiatrist and director of Zurich’s renowned Burghölzli Psychiatric Clinic, told the story in a lecture on the unconscious mind. With it, he made not an ethical point, but a scientific one. The lecture was entitled “Unconscious Maliciousness;” and the story illustrates that when he spoke of maliciousness, Bleuler describes “the consequence of the action, not the convictions of the actor.” Maliciousness is not a sign of a bad character; it arises “from ignorance or the dissolution of thinking. . . . Whether I tear off their legs out of evil or ignorance, it does the daddy-longlegs just as much harm” (1905, p. 3-4). The results of one’s actions are independent of one’s motives.

Bleuler directed the Burghölzli clinic for almost thirty years (from 1898 to 1927). There he became a giant of early twentieth century psychiatry—an early, though critical, defender of Freud and mentor to Carl Jung, Hermann Rorschach, and Ludwig Binswanger among others. Most famously, he reconceived and renamed the mental disorder that had been labelled “dementia praecox” by Emil Kraepelin. In 1908, Bleuler named it “schizophrenia” (Graf-Nold, 1991; Hell, Scharfetter, and Möller, 2001; Bernet, 2006, 2013; Scharfetter, 2006;Tölle, 2008; Maatz and Hoff, 2014).

Later in his career, Bleuler used the point of his story to mount an intricate defense of the centrality of memory for the unity of mind and body (Möller and Hell, 1999; Hell, 2000). Nearing his mid-60s and frustrated with the persistence of outmoded views of the relation between mind and body, he argued for their identity, placing memory at the foundation of his theory of human nature. Contrasting his identity theory with mechanism and vitalism, he termed his approach “mnemism.” It was based on the “mneme” concept of the German morphologist Richard Semon. Bleuler’s theory extends his central clinical concepts—notably autistic thinking (autism)—to a view of normal humanity supported by objective evidence on the brain. Included among his sources are his mentor August Forel, Constantin von Monakow, and Charles Sherrington. But Semon, Sigmund Freud, and the discoveries of the Russian physiologist Ivan Pavlov are at its core.

Each was adapted to Bleuler’s purposes, and their synthesis reveals a scope that arguably transcends his pioneering contributions to psychopathology. At its center is a controversial concept that he saw as essential to completing the identity of mind/body: He termed it “psychoide,” and he framed it as a bodily psyche. Like the mind, it is physical. It functions to sustain bodily expediency, uniting the automatisms that drive mind and will. In what follows, I explore Bleuler’s elevation of memory, the inheritance of acquired characteristics, and psychoide to a theory of life and mind that he hoped would challenge both the elementalism of scientific psychology and the ascendancy of psychoanalysis. Elaborating Semon’s “engram”—a physical memory trace in the brain, he extended the theory to all animal life.

Bleuler stressed the unconscious over the conscious mind, restricting consciousness to occasional significance (Hell, 2000). Instead, he saw mind as a product of memory plus the bodily automatisms—reflexes, drives, instincts, and emotions—by which the bodily psyche “calls forth on the one hand the expediency [Zweckmäßigkeit] of psychic activity and on the other that of physiological function and the evolution of species, placing each on a side under commensurate viewpoints” (Bleuler, 1925, p. 2). Insisting that it did not entail true purpose, he presented psychoide as a system of causes that unifies physiological expediency and is justified by mind/body identity. It would, he believed, finally establish psychology as a natural science.

But Bleuler also sought an alternative approach to evolution and adaptation. Psychoide provides the impetus for coordinating the holistic adaptations necessary for the survival of individuals and species. As such, it undergirds his rejection of what he regarded as the “absurd” in neo-Darwinism. The implications were great: His account redefines genes. If reflexes and instincts depend on memory, why, he reasoned, “should heredity be an exception” (Bleuler, 1925, p. 19)? When psychoide’s species memory unites with the engrams of individual minds, the result sustains and shapes the coordinated plastic adaptations appropriate to short-term individual circumstance—the raw material of evolution.

Bleuler had pondered these ideas for many years. In 1894, he published a sketch of many of his key concepts (Bleuler, 1894). After 1920, he elaborated them in three long works: the two editions of his *Natural History of the Mind and Its Becoming Conscious* [*Naturgeschichte der Seele und ihres Bewußtwerdens*] (1921b/1932), *Psychoide as a Principle of Organic Development* [*Die Psychoide als Prinzip der organischen Entwicklung*] (1925), and *Mechanismus-Vitalismus-Mnemismus* (1931). By 1920, Freud’s fame had grown and a kind of scientific psychology was firmly established. It was time for Bleuler to offer his alternative. The works reiterate three positions that pervade his synthesis. First, mind is a natural entity that only appears different from brain because humans usually perceive it introspectively, from within. Second, in higher organisms, adjustments to complex and changing environments require the coordinated action of the whole body/mind. His holistic functionalism makes explanation via any material unit—molecules, organs, or cells—insufficient to understand life. Because the functions of life are hierarchically integrated, any atomistic approach must fail. Finally, evidence of their integration would confirm the insufficiency of neo-Darwinism’s exclusive reliance on chance and selection.

He was confident that he was right. In the preface to the second edition of the *Natural History of the Mind*, he complained of denunciations by philosophers reacting to his earlier edition. He had learned nothing significant from their criticisms. “[T]rue falsity,” which might slip out, “had been mentioned by no one” (1932, p. V). He could not imagine that his interpretation of psyche as “a unified neural apparatus for the maintenance of the individual and the species could be false” (1932, p. 3). Bleuler acknowledged that others, including Sigmund Exner, Ernst Mach, and Freud, had also deemphasized consciousness. But he was offering an entirely physicalist synthesis that united phyletic adaptation, individual cognition, and personality to connect brain and mind to a novel unified view of evolution.

Bleuler’s Rise. Several varieties of neutral monism had already appeared in Europe by the late nineteenth century (Banks, 2010). Most assumed an equivalence of brain-mind complexes composed of atomistic elements; and some—notably Ernst Haeckel’s—addressed evolution (Weber, 2001; Ziche, 2001; Richards, 2009; Gliboff, 2012). Bleuler’s teacher, August Forel[[2]](#footnote-2) too had proposed that consciousness should be explored as a “self-reflected brain activity” using a brain-focused “scientific monism (identity theory)” (1910, p. 12). Even in 1894, bemoaning a natural science that was too steeped in the artificially separate analysis of facts, he stated that “psychology and brain physiology are only two approaches to the same thing”, facilitating their synthesis into a single discipline—“psychophysiology” (Forel, 1894, p. 18).

Bleuler incorporated several aspects of Forel’s identity theory. Most significant is the centrality of Semon’s account of memory. Forel was among the greatest defenders of Semon’s mneme theory (Sleigh, 2007; Logan, 2015).[[3]](#footnote-3) Plus Forel too, denied the reality of will. He considered free will an illusion, instead favoring objective accounts of thought framed by memory traces expressed in action. “[O]ur willed resolutions are first triggered . . . [as] sweeping activations of coordinated movement innervations . . . in the cortex” (Forel, 1910, p. 45). Consistently using Semon’s terminology, Bleuler retained both.[[4]](#footnote-4)

Bleuler became Forel’s assistant at the Burghölzli in 1885. He began work there after two years of study abroad, which (following stays in London and Paris) ended at von Gudden’s brain anatomy laboratory in Munich. Forel, who Bleuler considered his “great teacher” (Apelt-Riel, 2009, p. 22), then endorsed Bleuler for an appointment as Director of Switzerland’s Rheinau Asylum. Manfred Bleuler (1951) explains that in the planning stages Rheinau was to be a custodial asylum built for chronic untreatable cases, while the Burghölzli would receive from Rheinau that portion of acute cases deemed capable of improvement.[[5]](#footnote-5) Just before Bleuler’s arrival, Rheinau had undergone a period of neglect. But during his twelve years there, Bleuler introduced the systematic maintenance of patient records, improved nutrition, and, for immobilized patients, began a program of regular outdoor exercise. He ate with the patients; he took part in lay theater performances; he helped dig up the potato harvest; he even danced with patients—all were interactions that gave him ample time to observe the patients’ speech and behavior (Bleuler and Bleuler, 1986; Apelt-Riel, 2009). Bernet (2013) describes the rapid transition that Bleuler underwent after 1886, when he no longer saw disorders of mind as solely a product of the brain and began to stress the psychological causes of mental illness.

The Zurich Context. Bernet (2013) argues that redefining dementia praecox as schizophrenia was only part of the larger program though which Bleuler reframed the Zurich School.  At the core of that program was his advocacy of a concept of association that harkened back to the Lockean enlightenment tradition and combined the “sociogenic and the psychogenic” (2013, p. 193).  In the late nineteenth century, huge increases in the number of mentally ill had accompanied industrialization and urbanization at a time when therapeutic nihilism raised both professional and public concerns.  Bernet shows that all “crystallized around the so-called functional psychoses” (2013, p. 64) in ways that challenged the very legitimacy of psychiatry.

In 1898, when Bleuler succeeded Forel as Director, the context surrounding the Burghölzli was further complicated by Forel’s situation. Bernet (2013, Chapter 2) describes the controversy that plagued him, as antipsychiatry activists argued that asylum psychiatry was curtailing the natural rights of citizens. Though Forel—also stressing psychogenesis—eventually initiated important legal protections for patients, a reporter who had posed as a guard in the clinic, made flagrant charges about the conditions under Forel’s watch (Meier, 2006). Though a government commission cleared him of any wrongdoing, Forel resigned his directorship.

The Germans had dominated nineteenth century psychiatry, championing neurological approaches to mental disease even as early directors of the Burghölzli (Bleuler, 1951; Graf-Nold, 1991). Forel changed that. But after he resigned, the Zurich medical faculty proposed that well-regarded Germans with university and clinical experience be appointed to succeed him, a step that Forel endorsed. But politics intervened (Bleuler, 1951; Bernet, 2013, Chapter 2), as local authorities called for a native Zuricher to be named director (Forel was from French-speaking Switzerland).

Bleuler had been trained by premier German neurologists. His reforms at Rheinau had clearly demonstrated his administrative and clinical expertise. But he was, in Bernet’s words, an “explosive candidate” (2013, p. 104). Government officials favored his appointment over the academics’ outside choices because, in the government’s view, the goal of the institute was to heal. By being able to fully communicate with his patients, Bleuler could earn their trust. So, though the academics saw him as unqualified to teach, Bleuler’s status as a native-born Zuricher from an established family gave him an edge.

Bleuler’s reliance on psychogenesis became vital in the context of Kraepelin’s great influence. He had “replaced Kraepelin’s degeneration concept with dissociation,” producing a new approach to “functional mental disturbance . . . and a new program—a social-psychological view of psychological illness . . .” (Bernet, 2013, p. 12).  Plus he did so when issues of psychiatric classification were part of a larger “multidimensional crisis of psychiatry” (Bernet, 2013, p. 63).  With the rise of functional over organic psychoses, earlier organic diagnoses were being derided as “brain mythology” (Bernet, 2013, p. 70). Yet Kraepelin still viewed dementia praecox as somatic and untreatable. So Bleuler’s challenge raised the contentious issue of treatability in the context of the “dementia praecox question” (Bernet, 2013, Chapters 2 and 3). Bernet suggests that the issue aggravated the relation between asylum directors and university clinics: For the directors, “[a]n increasing number of diseases explained as untreatable overcame the accusation of “therapeutic nihilism”” (2013, p. 89, her quotes). But not at the Burghölzli. Bleuler instead enshrined a limited treatability instilled via plastic memory. His descendants wrote: “He studied the schizophrenic’s inner life essentially in the same way as we study the inner life of neurotics, of healthy men, and of ourselves” (Bleuler and Bleuler, 1986, p. 663). He was in the difficult but promising position of championing psychogenesis and treatability, while framing an original model of mental disturbance.

His later writings confirm how completely Bleuler rejected Kraepelin’s approach. He also explicitly denounced the methods Kraepelin used to establish psychiatry as well as his psychophysical parallelism, a view of causation that places failures of will at the core of psychopathology. Bleuler’s identity theory would displace the outdated positions on mind, volition, and body that Kraepelin had imported from his influential teacher, Wilhelm Wundt.

**Bleuler’s Reciprocal Identity Theory**

Bleuler systematically argued his position on mind/body identity in 1921, in the first edition of his *Natural History*. Establishing the identity of psyche and physiology, he believed, would finally render psychology a natural science. Neither mechanism nor vitalism had effectively accounted for the dynamics of mental function. And, like chemistry, psychology too, could be a science “without other requirements”—one conducted “as [science] is done by natural scientists everywhere” (Bleuler, 1932, p. V). In 1931, stressing a concept of psyche consistent with observed facts and freed from consciousness, he wrote: “To my knowledge only the monistic identity-theory complies with these requirements: The human psyche is (compared to the vegetative) a specialization directed by the animal [psyche] and by individual experience toward guided organic functions. The preponderance of individual experience has in [the human psyche] reached its maximum. But in general, all psychic characteristics are also included in the simplest living organism” (Bleuler, 1931, p. 55).

Bleuler’s is a reciprocal identity theory—one that switches back and forth between subjectivity and objectivity as the need requires. Most of the evidence he used to support mind/body monism is objective, given in the senses. But scientific necessity dictated that he begin with the mind. Brain science was still in its infancy; it could offer no foundation from which to approach the mind.[[6]](#footnote-6) Psyche would have to be his starting point.

Functionalism and Memory. Bleuler argued that many things in nature appear differently when perceived from the inside versus the outside. He illustrated with concave versus convex lenses and the walls of one’s home. Indeed, in interaction with other people, he wrote, it is natural to intermix the subjective and the objective. When we comprehend one another’s intentions, “all subjective intermediaries must be inferred by analogy.”  But, he believed, when this is done in biological psychology, the resulting mixtures often lead to contradictions—sometimes even to “psychophobia” (both quotes, Bleuler, 1931, p. 54).

With mind and brain too, when entities are viewed subjectively versus objectively, “the same” often appears “principally different. . . . [I]n the subjective one perceives no spatial dimension and in the objective no consciousness” (Bleuler, 1931, p. 56-57).  But these differences are false—a result of one’s point of view. In the relationship between brain and mind, we often acknowledge that some inner and outer qualities are “in a certain relation essentially alike.” He illustrated with emotion: The outer quality “of acceptance corresponds from within to an accompanying pleasure, that of a refusal to an accompanying aversion” (both quotes, 1931, p. 57).

The example reflects Bleuler’s functionalism. In the quality of “acceptance”, bodily function and perceived mental product are one. And, though he proposed some key mental processes, he never equated the mental with bodily processes. But the cost was high. Memory function was once a purely subjective concept, “imagined,” he wrote, “as a process of consciousness” (1931, p. 53). But “we are not permitted to recoil before functions that incidentally have the same attributes as the psychic, but which in one—from the outside, objectively—we can confirm no consciousness. . . . We have as much right to consider them as identical with the psychic as when we assume that our fellow humans have a psyche” (1931, p. 58). For this reason, he believed it “impossible” for a natural science to make “the presence of consciousness” a criterion of psyche (1931, p. 59). The distinction, he wrote, is useless to science and should be left to philosophers.

Even with function, however, the language problems raised by mixing subjective and objective perspectives could be troublesome. He would have preferred, he wrote, to have consistently relied on both languages. But because “there are no words that the psychic and physical sides of a function equably denominate,” one must begin with expressions already in use; and those describe the mind. Bleuler allocated to his readers the task of restoring identity either by setting aside “the sidedness of the meaning . . . or supplementing the one-sidedness with [a language of] two-sidedness” (both quotes, Bleuler, 1921b, p. 6). In addressing function, for example, he wrote “of a need obeyed”. He meant nothing teleological; but “need” was the operative word. Plus, because the psychological model had worked well with memory, the same logic could extend to functional outcomes:

“The theory of mnemism finds in biological occurrences the same principles that govern psychic occurrences. Our psyche is after all a specialization of functions that befits each living substance and determines the difference between dead and living matter. Sensitivity, the transmission of stimuli, their storage owing to engrams, the merging of the same with earlier engrams, and the influence of the means of reaction . . . through these saved experiences occur in principally the same manner in living substance as in our psyche” (Bleuler, 1931, p. 1).

He acknowledged the immense complexity of problems that include both ancestral evolution and the dynamics of individual life experience. But he was up to it.

Use Inheritance. Semon’s work (1904, 1911) was an attempt to modernize the old “Lamarckism” for the twentieth century, rendering the concept of the inheritance of acquired characteristics consistent with precise science (Schachter, 1972; Logan, 2015). He presented cognitive memory and heredity as internal physical traces—“engrams” that inscribe the past and guide both mind and organic development. His Austrian colleague, Paul Kammerer, a zoologist and accomplished experimentalist, provided considerable evidence supporting Semon and the inheritance of acquired characteristics (Kammerer, 1909; Gliboff, 2006; 2013; Logan, 2013; Taschwer, 2016). And both men were for a time engaged in the debates surrounding the concept, which had been challenged by the rise of genetics (Wilkins, 2013). But by the mid-1920s, Semon and Kammerer had each died by his own hand; and their unrelated deaths by suicide influenced the trend away from use inheritance (Meloni, 2019). So, amid a changing scientific landscape, much of Western and Central Europe abandoned the inheritance of acquired characteristics.

But this was not the case in Swiss psychiatry and brain science.[[7]](#footnote-7) Before and well after the 1920s, both fields were exceptions to the trend away from an emphasis on use inheritance. Forel and Zurich’s Russian-Swiss neuroanatomist Constantin von Monakow (Harrington, 1996; Wiesendanger, 2006; Logan, 2017) both championed the idea that events occurring during an organism’s lifetime can influence patterns of inheritance in their descendants. As, of course, did Bleuler (1934). Semon’s term “mneme” is the root of Bleuler’s “mnemism (Mnemismus)”, which, he wrote, is shorthand for “mnemic monism” (1931, p. 2). With it, he would present a view of mind more consistent with modern biology and brain science than either Kraepelin’s or that of Freud, his Viennese colleague and competitor.

**Mnemism and Bleuler’s “*Natural History of the Mind*”**

Bleuler (1894) had already endorsed an integrated holism and the primacy of the unconscious in an early sketch of foundational psychological concepts. In 1921, he elaborated these views in the 338-page *Natural History of the Mind and its Becoming Conscious*. He makes three things clear at the outset. First, invoking a revolution in physics, he defends his natural science approach: “One surely could almost equate the natural science certainty of the identity theory to that of the Copernican interpretation of astronomical relationships; . . . the “hypothesis” of psyche as brain function is, . . . hardly less well-founded” than that of Copernicus (Bleuler, 1921b, p. 11, p. 36, his quotes). Second, the only immediate reality is that given in sensation. But an understanding of the outer world, of hallucinations, and even objectivity is possible if one anchors one’s analyses in experience. Finally, what passes for a natural science of psychology is flawed. It relies too much on findings from experiments (which fail to unify) and on an approach to consciousness that ignores the unconscious. Bleuler instead presented a naturalistic biopsychology that is “part of biology, nothing more, nothing less” (1921b, p. 323).

The 1921 edition of the *Natural History* comprises four parts, by far the longest of which (almost 250 pages) is the third section. In it, he uses familiar terms—impression, perception, memory, idea, concept, and will—to present a thoroughly holistic account of the “psychological apparatus” of mind. A shorter section first stresses that this psychology is a true natural science. Challenging psychologies based in “obsolete speculative customs”, many of which “hinder or render impossible the understanding of purely natural science interrelationships” (1921b, p. 1), he will employ objective evidence that demonstrates the causal impact of lower brain areas on the cortex.

Throughout, Bleuler rejected any dissection of subjective elements of consciousness. For a scientific investigation seeking causes “such a concept is useless because the conscious mind only irregularly and “accidentally” includes segregated fragments of a causal ensemble” (1921b, p. 1, his quotes). No important relationships can be discerned from them. Though unconscious and conscious influences form “an indivisible unity of function” (1921b, p. 2), enacting that unity—which is central to objectivity—requires considerable input from the unconscious.

Bleuler’s functionalism is instantiated in the biopsychological apparatus accomplishing this. He divided it into “centripetal” inputs from sensation and perception that flow toward the brain and “centrifugal” outputs, guided by drive and emotion, that flow outward triggering the muscle contractions that enable nourishment, escape from danger—in short, survival. Central to their integration in humans are those engram complexes formed in the cortex, which are sometimes perceived as recollections. Because the assimilation of experience and the adaptive union of inflow and outflow depend on memory, Bleuler begins there.

Memory. Bleuler believed that memories last as long as the brain itself, and he understood both cognitive memory and heredity—“engram-genes”—as memory traces. If, in higher organisms, plasticity in cortical processes is identical to plasticity in the psyche and if instincts are flexible and inherited, he reasoned, genes must be engrams too. Even the simplest nerve bundles of ants have “not a little” store of engrams for plastic instincts and drives.

Three features of his account require memory as a foundation for the unconscious-conscious integration shaping paths through the sensed world. The first is its evolutionary underpinning. The foundation of psyche, Bleuler wrote, “consists of an apparatus that seeks to maintain the self and the genus.” It employs and even protects itself against the environment. In higher organisms, a “simple apparatus” of memory is formed that “makes possible the adjustment to individual, yes momentary, entirely new relationships.” Surviving then requires that such experiences be preserved “so that they operate as ongoing stimuli and can be used in “thought.” This mnemic thought function . . . in large measure maintains conscious quality and shapes the psyche of higher animals” (all quotes, Bleuler, 1921b, p. 34, his quotation marks).  He believed it had evolved to near perfection in the cortices of higher mammals and the forebrains of birds.

Second and most significant for humanity, longer-lived organisms require a means to bring the past into the future. This was one basis for arguing that heredity is not molecules, but plastic traces: “Had the earlier moment left behind a living or re-enlivened trace (engram), and if in the moments following, this trace is still or re-activated . . . , so are two conditions occurring simultaneously” (Bleuler, 1921b, pp. 39-40). Two sources of engrams linking disparate times could enable drives or instincts formed long ago to unite with the perceptions and ideas of the present to guide action. Change, movement, cause, and effect all “include as the essential momentum of the (psychic) synthesis according to memory” (1921b, p. 39). Finally, association and a huge store of dual engrams breaching time enhance adaptive plasticity. Their longer lives and more elaborated sensory systems make higher animals and humans “memory organisms [Gedächtnistiere].” Indeed, human memory is so changeable that evolution has shaped an adaptive mental stimulus “of self” that constantly passes before us, aiding the integration.

Dynamics of Perception and Thought.  Bleuler used the term “Psychismen” to refer the basic psychic entities of the mind. He enumerated just four. Three are foundational—impressions, perceptions, and ideas, and is one derived—abstractions. Similarities are extracted from birth in all three foundational structures to shape at first quite simple, then more elaborated concepts. Thought is explained by the four acting in accordance with the laws of association. It constitutes “an activation of long-lasting perceptions of the interrelations among things, so that in the present specific relationships of cohesionare associated . . . that we now do not see, but have experienced” (Bleuler, 1921b, p. 176).

Impressions are the direct products of sensation. For each sense impression there exists only one feature: one color, one tone, etc. Semon (1909) also stresses the identity of brain processes and impressions. But his impressions are associated elements in a mental atomism. For Bleuler, by contrast, impressions are “pre-psychic”. An isolated impression, like blueness, is not immediately consciousness. Rather, for consciousness, perceptions “are first . . . but in their emergence are complex assimilations of fresh impressions together with engram complexes that one can designate as “concepts of things”” (his quotes, 1921b, p. 138, p. 139). When, for example, a child cries after touching flames, “[it] fears not brightness, but the fire by which it was burned” (1921b, p. 138). Impressions become conscious only as parts of interrelated mnemic-perceptual compounds. The additive integration of sensations, impressions, and memories would yield only mental chaos.

To avoid it, Bleuler proposes a process of selection that sifts among simple impressions to create primitive concepts. Even in newborns, the concept ‘mother’ is extracted from a few interconnected impressions. Illustrating with the act of suckling, he explains that the consciousness of mother is “not the seeing of mother, but mother. . . . [The baby] does not first have individual impressions which it then assembles” (1921b, p. 118). Rather, what the child later calls ‘mother’ first consists of associated impressions of warmth, sated hunger, and smell, which the baby produces by crying. Coordinated by inborn reflexes, they form an unconscious abstraction linked by the pleasure of suckling and connected to output by the kinesthesis of movement.

This pattern is widespread in evolution. Describing the acid wiping reflex in frogs’ legs, Bleuler wrote that all perceptions are associated interconnections of impressions and engrams linked to movement. In the simple frog reflex, the spatial relationship of earlier cues must be united with those of the present. Though much more complex, the human central nervous system operates as just such an apparatus. In the child’s consciously-perceived ‘mother,’ new inputs (and reactions) are continually complicated by more and more perceptual input. But selection via inborn drives and reactions is present from birth, perhaps even before.

Bleuler believed that when perceptual complexes are stored as engrams, the relational pattern of perception dictates perfectly that of the stored idea complex. But because memory never wanes, all prior experience is available to reemerge into consciousness and possibly influence thought. Given this, Bleuler had to distinguish the selection process in perception from that occurring among ideas. Doing so would explain how (with so much information) only a few memories come to dominate thought at a given time. To address the problem, he summarized the differences between perceptions and ideas, stressing their distinct contents and functions.  The contents of perceptions seem foreign, as if they are dictated by the outer world (or our bodies). Ideas, however, seem like our property—parts of the self and subject to our intentions. But this is an illusion. Though in humans they perform different functions, ideas “are nothing but temporally extended perceptions” (1921b, p. 129).

Abstraction and Selection. In humans, the expansion of the cortex had both enhanced the capacity to store engrams and enabled the higher function of abstraction. Bleuler saw abstraction as the central process of thinking: It produces generalities as similarity sorts among inputs to extract the comprehension of a class. The class concept then selects from among the vast human “associative endowment” only those engram complexes most relevant to a particular situation.

Bleuler then details how re-working these “relationships of cohesion” depends on principles unique to the processing of engrams. First, he explains the “polarity” of engram complexes. Engrams do not just replay “the direction of the original experience.” Instead extracted engrams are often small “reprocessed pieces” directed forward. “If I imagine a path in reverse, the series of ideas unwinds not at all like a running cinemagraph continually from backward to forward, but as small pieces of the original succession of experience. The idea of a particular house, [or] a plaza, . . . revives the idea of a previous house or plaza. None of these individual ideas in themselves contains anything of a returning . . . all or most go forward, in any case never backward” (all quotes, Bleuler, 1921b, pp. 183-184). Second, Bleuler assumes an asymmetry in polarity between the specific and the general. Similarity creates generalities, but generalities rarely yield specifics. As the mind moves from specifics to generalities, more and more relationships are abstracted when competing drive demands (and new associations) trigger ever more concepts. The third is the tendency of generalized concepts to form a special subset of associated engrams that are perceived as intentions. In humans, this subset—termed “thought goals”—precede action. Such complex patterned thought goals—not intentions—then dictate action.

Using a homeowner’s experience of catching a mouse, Bleuler illustrates how memories function as thought goals when portions of extracted concepts are linked to outcomes. After watching a mouse emerge from behind furniture, a homeowner eventually notices that the concept ‘mouse’ applies beyond the circumstances of mice and furniture.  He then generalizes to other relationships of pursuit and capture, such as deer hunting, that are experienced in other locations and with different animals. Such thought goal abstractions are both unavoidable and beneficial: “Already during the experience and after, with each recall we form integrated general ideas . . . in which the details are remembered . . . only exceptionally, if they are needed” (Bleuler, 1921b, p. 143). The associations among thought goals determine “the dominant striving in a given moment” (Bleuler, 1921b, p. 185).

Thought Goals, Personality, and Centrifugal Output. Arranged in hierarchies consisting of a central goal with various sub-goals, thought goal complexes change from moment to moment, guiding the transition from centripetal input to functional output. In the mouse example, even though pursuit plays out differently in hunting versus in the drawing room, the goals of pursuit and capture guide both. Even with goals as general as the quest for the Pythagorean theorem, the

“foundational striving” is an “elementary knowledge drive” (1921b, p. 186) that shapes a central goal, and, in derived form, facilitates action—just as any biological drive would.

Memory, however, can either trigger or inhibit. Bleuler argued that the presence of opposing forces, a common regulatory attribute of the body, also operates in the brain. Opposing intentions involve cortically-based neural inhibition that constantly occurs among engram complexes. The inhibition curbs other drives to ensure adaptive specificity. “Every ongoing thought inhibits those opposing it and channels those adjusted to it so that the discharge of a thought operation is unambiguously determined in connection with a particular thought goal” (Bleuler, 1921b, p. 292). But the effect of the thought goal is never just cortical: It emanates from “lower centers: . . . Food odor produces no salivary secretion if an animal is sated. In humans, it is pleasant if one is hungry, disagreeable if one is surfeited” (1921, p. 186).

The human sense of self facilitates the specificity of the outcome by rendering it conscious. Bleuler saw the subjective concept of personality as an internal perception, which literally personifies consciousness, strengthening either inhibition or facilitation within the “determined boundaries” of the self (Bleuler, 1921b, p. 47). These boundaries “sustain thought acts as a constellation with idiosyncratic meaning (1921b, p. 186);” they represent one’s most valued aims.

Mental Causation and the Opportunity Apparatus. While writing the *Natural History*, Bleuler (1921a) published a paper proposing a human mental structure that he called an “opportunity apparatus [Gelegenheitsapparat]”. In it, he clarified a view of energy in the body that differs from Freud’s (see below). Biological energy, initiated by sensory input and transmitted to the brain “as neural waves [Neurokym], is . . . made free [and] conveyed in some kind of latent or free energy form, without somehow being bound to a noticeable result” (1921a, p. 673). It is then conducted to meet the situational demands of muscle action. In the *Natural History*, he explained how in the brain the opportunity apparatus can ensure this. Once stimulated, “using certain switches, . . . we then simply assemble an apparatus that functions . . . automatically for particular situations . . . like an inborn reflex or drive mechanism” (1921b, p. 278).

Modified apparatuses change constantly and can last just a fraction of a second. Most control simple or highly practiced bodily functions. But with higher order abstractions, such as in analytical thinking, the complications become huge. Extractions might involve ideas of the parts of concepts—the concept page as a part of the concept book, and abstractions of abstractions—such as the concept of association itself. Yet the operation is always the same: The relational patterning of stored concepts dictates “the progression of associations to the remainder” (1921b, p. 174). That path is given by experience, by the power of words, and by transfers of drive and emotion from prior functions. Even a single word can carry a goal idea: “In the idea of “wherefrom” lies . . . the goal concept. But one should say “a” goal concept, because there are many others still within the same thought operation” (Bleuler’s quotes, 1921b, p. 174).

Once activated and the task completed, the active apparatus disengages, possibly to be reactivated later. Deactivation is essential because only then can change and reactivation occur. As new associations are formed, “[a] certain tendency always exists to act in the direction of the “stopped” apparatus in the healthy and the ill” (1921b, pp. 280-81, his quotation marks), either facilitating or inhibiting a previous thought goal. Finally, the diversity of strivings and thought goals in any individual situations ensures that actions triggered by one thought goal complex will compete with those triggered by others. With the specificity of the opportunity apparatus, Bleuler could accommodate the inhibition that must take place in the brain, given the vast store of latent human engrams.

Switching and Neural Energy. Bleuler saw neural energy as an inborn feature of drives. He assumed that each drive system had evolved for a specific use and then “adjusts and works on it with a particular “tension” . . . as long as it is not in some way reworked . . . independently of how much energy is released or already used. It is withdrawn from the energy supply of the CNS and is, therefore, practically inexhaustible” (Bleuler, 1921a, p. 698, his quotes).

  To explain how this is controlled in the brain, Bleuler (1921b) proposed a transmission mechanism consisting of switches. Open switches transmit the energy causing muscle contractions. When closed, the switches can then be partially or completely reopened. When fully open, the pattern of switching corresponds precisely to the ‘intended’ outcome. This is the meaning of Bleuler’s phrase “we do what we want, because we want what we do (1921b, p. 276).”

He then explained the role of biological energy in inhibition.  In the body, energy does not operate like a simple machine, but more like a complex steam installation—a locomotive. The engineer does not direct the steam power; he delivers it to switches. It is the structure of the locomotive that produces movement either forward or backward. Steam energy (or electricity) is effective “insofar as the way is opened and the direction shown” (Bleuler, 1921b, p. 288). So it is with the “discharge ready” (p. 286) energy powering neural transmission: Any thought goals (and switches) corresponding to “unrelated [strivings] and especially those representing counter strivings are inhibited, blocked out” (1921b, p. 293). Switching is not the expression “but virtually the cause of unity in the highest central neural functions” (1921b, p. 187).

But unlike the steam energy in machines, the mind/brain controls the switching pattern, directing energy and powering action when the situation permits. This generates a “battle of switch positions” (Bleuler, 1921b, p. 289). The battle could, but often does not, produce an outcome dominated by just one. Instead most outcomes are graded balances among the many thought goals determining switch numbers:  “In more complicated mental strivings the numerical undoubtedly plays an especially large role, such that the same striving . . . can be more or less facilitated or inhibited” (1921b, p. 290). Inhibition is everywhere, and competition can weaken all competitors, producing tension and even fear.

Once a machine is turned off, steam power is no longer effective. But switched-off strivings continue to exist and to influence the competitive balance. Latent engram switches [Schaltungsengramme] make this possible. Plus momentarily changing conditions can weaken or suppress just part of a thought goal complex, and that part can be revived later. This might suddenly weaken or reverse a decision that had once seemed firm. Bleuler considered the switch-powered multifunctionality that mathematically dictates outcomes “a universal law of the entire CNS, not just of the psyche” (1921b, p. 294). But though the cerebrum controls the body, this control yields goals “only if the cerebrum itself can be controlled in causes and effects—if, therefore, centripetal stimuli from all bodily organs travel to the cortex” (1921b, p. 48).

**Psychoide: The Unconscious Bodily Psyche**

*Psychoide as a Principle of Organic Evolution* appeared in the eleven years separating the two editions of the *Natural History*. In it, Bleuler proposes his “bodily founder psyche” as the entity that ensures peripheral integration and action. It was arguably his most original and most controversial concept. Invoking authorities such as Claude Bernard and Hans Driesch, he argues that the bodies’ functions require a “bodily psyche,” an “urmind” that has been specialized as “a brain mind” and eventually even as a “cortical mind” (Bleuler, 1925, p. 33).

Psychoide and Evolution. Bleuler often criticized the neo-Darwinian approach to evolution. To him, it was beyond improbable to assume that chance could aggregate all the features that are unified in complex adaptions. This criticism was not unusual in Europe between 1880 and 1920. Gunter Mann’s (1977) account of neovitalism describes several critiques of chance by neo-Lamarckians who sought a return to teleology through an evolutionary expediency that was compatible with science.

Bleuler could not have agreed more with the critiques of chance. But he rejected neovitalism’s special life force. Yet the mechanists who imagined genes as chemical processes were also wrong. The likelihood that all part-functions could come together at once rendered neo-Darwinism too “absurd”. But he did not completely reject chance and selection. “[O]nly the exclusiveness of a Weismann cannot pass compared to our view.” Addressing the problem required finding “next to the Darwinian conception other completions that fill its holes. . . . Selection in the Darwinian sense exists (both quotes, Bleuler, 1925, p. 3).” To do this, vitalism and mechanism had to be replaced by an account of genes compatible with how the body operates. “[T]he expediency of all life from the human cortex . . . and the development of the individual and species to the activity of the simplest living substance . . . is represented . . . as a complete qualitative unity” (Bleuler, 1925, p. 30). To ensure it, Bleuler proposed his unified and unifying non-teleological alternative to the exclusiveness of chance in explaining adaptation.

In *Psychoide*, he asked: “Should only the emergence of species . . . be something principally different—[something] not expedient” (p. 19)? To argue it was not, he defended his application of bodily expediency to embryological development (citing Semon) and to populations of evolving species. The latter were problematic because they required explanation of how, in a changing population, goal-directed tendencies could increase after the individuals first manifesting them had died. Noting that life had persisted for eons, he argued that without something independent of chance that sustains evolving adaptions, “the chance that creates variation would immediately destroy each advantage achieved. . . . [L]iving organisms must in themselves form an evolutionary direction, a goal striving (1925, p 18, p. 19). . . . [C]hance variation including selection can create nothing that persists” (1925, p. 18). That fell to the bodily psyche—psychoide.

Bleuler acknowledged that none of this was currently understood.  But psychoide’s integrated functioning coupled with an inherent direction that yields life-sustaining coordinated outcomes offered far greater plausibility.  With it, Bleuler envisioned how many anatomical and physiological characteristics “must subtly link to one another in order to maintain a species without the elimination of life’s readjustment to a new species or to affect a minor change in the lifestyle of an existing one” (Bleuler, 1931, p. 25). Without some such tendency “the existence of a reacting being would be impossible, and only that exists which can exist” (Bleuler, 1925, p. 5).

Just as the cortical psyche had become “comprehensible” by natural science, so, using the psychic model one could frame expediency as a bodily psyche. Doing so gave him a working language. But psychoide was not just a metaphor. Bleuler quickly abandoned the model to argue that psyche itself is an evolved “specialization of an urmind or urpsyche” that had emerged with the “brain mind of the central nervous system,” finally branching off and becoming “a cortical mind [Rinderpsyche].” For the individual and the species, the bodily psyche “forms a continual unity from all its ancestry up to its descendants; it is first also a phylopsyche, . . . [that] is ramified in descendants and . . . again coalesces in infinite combinations like a multidimensional net up to the last” (all quotes, 1925, p. 33). His model had become the specialized central nervous system descendent of its psychoid ancestor, the phylopsyche: “To the extent that drive function . . . is likewise psychic, it forms a kind of subpsyche that in higher vertebrates is in essence a founder psyche” (1925, p. 145).

Explaining this required addressing some new issues. Individuals, he wrote, manifest this unity as an aggregate psychoide [Gesamtspsychoide] that enables one organ to function in two ways: It cooperates with other cells to meet “the requirements and capacities of the whole” and it “retroacts” to fulfill its particular specialized “place in the workplan” (Bleuler, 1925, p. 35). To describe this dual role, Bleuler added to two new concepts that were needed for the integration of fully unified tendencies.

The Body’s Information Service. For the degree of coordination required of holistic adaptations, each cell must have information on the momentary state of all other cells. Again using psychological language, Bleuler wrote that in physiology, development, and regeneration “each element must know . . . what all other elements do at each moment.” This includes the broad outcome and “for each part, special influences of its surroundings. . . .” Without such a “messenger service [Botschafterdienst] . . . , one part could not direct itself to others, not collaborate with them” (all quotes, 1925, p. 31). As Bleuler supported his idea with evidence, he translated from his psychological language to objective outcomes. When he wrote, for example, that one cell “knows,” he meant “nothing more than it receives from other cells some kind of stimulus, then reacts to it so that . . . an allocation of roles occurs that fulfills a specific function.” More translations follow for “recognizes,” “abstracts,” and “strives”. When cells or psychoide “abstract”, they react not to all stimuli, but “as if only a part of them or only a single stimulus had occurred or as if they had learned what to lift out . . .” (both quotes, 1925, p. 32).

Bleuler cited evidence of such messages in the gastrula-stage development of sea slugs. When small pieces of tissue are removed and placed where another organ normally develops, the moved pieces take on the function of the new surround: Brain pieces become skin. He interpreted this as resulting from the distinct signals from other cells already active in the new position. Research on hydra and sea urchins demonstrated similar effects of location on function. He likened the “collaboration” among cells to a battalion of soldiers; each soldier knows the positions given others and follows the prescribed battle plan. Bleuler believed it a “general principle of physiology” that each part seeks to maintain the others; each is a “natural consumer” of the conditions of others.

“Thanks to this news service, an organism assembled from individualities . . . is “integrated” into a whole. . . . [T]hroughout, outer conditions codetermine all, [as] one part develops . . . because of functioning faster or differently than other parts. [T]hereafter, . . . function and form are adapted to one another according to the specific plan.” This creates “a harmony” of all functions working together “with a complexity and precision that is not at all overseen by our cortical psyche, but is only possible in psychoide if each part knows what happens in the others” (both quotes, Bleuler, 1925, p. 36).

Life’s Formula: The General Function Plan. The second concept describes the general plan assuring such harmony. Having discussed why disruptions and physiological maintenance require an informed psychoide, Bleuler addresses how the specialized tasks of individual cells, suborgans, and organs are all directed toward the same final outcome. Despite cell specificity, the body still risks “anarchy” unless “a general function plan” exists by which each cell “endeavors to realize the role accorded to each” (1925, p. 44). The plan reiterates the reliance on associative memory plus emotion to integrate unconditional responses with once indifferent stimuli; but here it extends beyond, for example, just digestion to the entire system. Bleuler labels this larger organism-wide coordination a “life formula” (1925, p. 6).

It is a living blueprint assuring that the specifics guiding each cell or organ encompass all their tasks.[[8]](#footnote-8) “[T]hat all organs, in perpetuating what exists and in reestablishing a disrupted equilibrium, react so subtly shows a functional plan outmatched in its complexity by all those that could ever be devised by human rationality” (Bleuler, 1925, p. 48). It further makes ever greater advances possible in evolution when “biological meaning” is extended to all, as the formula is unified with the ‘true’ psyche to sustain life in a changing world.

To argue the point, Bleuler identified three principles that define the formula. The first is cooperation, Bleuler’s “general principle” of physiology. Numerous tasks are required. But one cell can renounce its task and take on another to compensate for missing functions. In many species of worms, for example, if the head is severed twelve times, regeneration via cells with initially different functions still occurs. “[U]nder all kinds of external influences,” he wrote, organs do not just function as usual, “rather any disturbance is balanced through an adaptation to other functions or via compensation” (Bleuler, 1925, p. 47).

The second and third principles are plasticity and self-reliance—both producing adjustments to circumstance. They differ in how great those adjustments are. Bleuler saw the aggregate life formula as “something entirely variable, something nestled in another, something animated . . . ” (1925, p. 49). Such plasticity was apparent with hormones, and he illustrated with the effects of transplanted sex glands. Under altered hormonal conditions, “a completely inverted tropism [Tropie] is produced to the same instead of the other sex” (1925, p. 49)—for Bleuler an extreme outcome, comparable to a locomotive reversing itself. Though all organs can reestablish a “disrupted equilibrium,” this was his “most tangible example” of the formula’s plasticity (1925, p. 48). If sustained, persistent change in conditions could even produce a new life plan—a complete change of function. The likelihood of such novelty was especially hard to reconcile with neo-Darwinism’s chance, because, he wrote, if nothing had been previously tested, “nothing could have been have cultivated by selection” (Bleuler, 1925, p. 73).

In humans, Bleuler used performing musicians to illustrate how patterns of resonating vibrations could enable cells to successively react to one another, as each change registers in many based on the reactions of others. In a choir, resonant reactions enable each singer to respond to a single voice as well as to the entire chorus. Feedback, cooperation, and specialization all occur, as both the music example and the information service rely on a plan that enables specific reactions to yield coordinated outcomes. “The prevailing life formula . . . would therefore be a concert of uncountable continually adapted part functions. Each individual cell perceives the entire concert, but reacts outwardly only to specific qualities of vibrations, those corresponding to its disposition and its configuration” (Bleuler, 1925, p. 68).

The goal of the blueprint is to “use matter to create “something living”” (Bleuler, 1925, p. 50). This is the third principle. It means that the same function can be accomplished with different materials in different ways. Because the blueprint does not depend on any specific material, it maintains a degree “self-reliance”. “Within certain boundaries it gets the materials needed” then “seeks to succeed under very different circumstances” (1925, p. 52).

Affect and Ergie. Affect, like association, is at the core of Bleuler’s approach. Drive-generated emotions initially contain no content. Their content comes from experience when associations add affect to outcomes that lack prior value. This too is given by evolution, as associative value and even the speed of processing are influenced by pleasure and/or discomfort. The primitive physiology of many lower organisms involves just a simple conditional union of drive, affect, and experience specific to only one or a few drive systems. But in higher organisms, more complex integration requires a larger unifying concept [Gesamtbegriff] that can encompass and even go beyond psychoide. For this, Bleuler proposes “ergie”—an energy concept that refers to “the reactions of the entire creature” (Bleuler, 1921b, p. 229) as it manifests a comprehensive self-reliance.

His rationale for adding ergie was that adapted animals must react and “actively operate” on their surroundings. The resulting functional unity had “never” been expressed in a single concept; rather, its processes “had been singled out as independent.” In humans, ergie therefore encompassed “emotionality and the actual centrifugal functions: decisions, intentions, strivings, drives and instincts, and action” (Bleuler, 1932, p. 169). In the course of evolution, this expansive and dynamic stimulus complex had been “endowed with a preformed force of its own.” So, he wrote, ergie determines “at the same moment the utilization of released energy and its quantity” (both quotes, 1925, p. 170).

As ergie integrates various emotionally-toned situations into the mix of adaptations, “centripetal and centrifugal functions as well are lifted out of the chaos and . . . receive a special biological [biische] valence” that selects “the most important functions . . . .” The combination of affect with the energy of so many inputs produces an impressive “reactive activity [Aktivität]” (Bleuler, 1932, p. 94, p. 27). This comprehensive “blueprint” was, to Bleuler, more impressive than psyche: When functions are repeated thousands of times “as the experience of earlier generations is used, so this is no longer just mere experience; it becomes an ingredient of the blueprint. . . . Further, the human psyche . . . is still a paltry specialization of psychoide, given [the latter’s] more complex integration of a billion cells, its direction of all functions, of bodily development from egg to death, . . . [and] its direct continual interrelation with earlier generations and their experience. Psychoide has the experience of billions of years at its disposal, not merely (at most) of decades like the psyche” (Bleuler, 1925, p. 50).

All of this requires flexible engrams: “In the evolution of emerging life, therefore, . . . the life formula operates entirely like the engrams of the cortical psyche, . . . [via] instincts, reflexes and, above all, in the organization of various muscle contractions into useful movement” (Bleuler, 1925, pp. 52-53). He saw this capacity for change as the most important difference between life and non-life. Unlike the solar system, where the cycle does not include the past, life constantly changes: “The biological blueprint” never seeks something finished, “but is something changing, a becoming and a lapsing . . . “ (1925, p. 53). He offered many cases of memory, operating, for example, in swallows that, while hunting, project the flight patterns of the mosquitos they capture. All show that in life, the past lingers into the present—even if briefly; “that is, [physiological] memory must exist” (1925, p. 60).

Quoting Oscar Hertwig’s *Anlagen*, Bleuler reiterates that genes are “nothing fixed, unchangeable”. The plasticity and coordination of the life formula both require that genes “be nothing essentially different from the transformed functions that are set by the incoming messages” (Bleuler, 1925, p. 69). Imaging the infinite numbers of chemical genes needed to do this, he asks rhetorically, “where is this gene demarcated” (1925, p. 70)? Genes too must be oriented to other functions and to the general plan—“that is, they behave like psychological or functional neural tissues . . .” (1925, p. 70). He includes many examples showing that not chemicals, but “an engrammatic mechanism on analogy with earlier experience” more effectively accounts for adaptation (1925, p. 73). Citing Kammerer’s research on amphibian color change, he wrote, the genetic material must “again and again be newly fabricated” (1925, p. 66).

Disclaiming volition—none of this implied “intent or an (unconscious) purpose”—Bleuler concludes that life’s formula “has a future “aim,” and a “goal” of actuation”: the maintenance of life” (both quotes, 1925, p. 55, his quotation marks). Most importantly, the formula as “the entirety of the genes both as the actor and leader of all physiological events is therefore the sum of phyletically-acquired engrams.” In is in this sense that, “[a]ll life maintains itself through memory” (both quotes, 1925, p. 63). Genes as engrams make adaptation plausible by unifying the plan of the “Gesamtpsychoide” with individual experience. And because the bodily ancestor resides below the cortex, psychoide as founder psyche could clarify why so many psychic functions remain largely unconscious.

**Challenging Freud: Autism and Bleuler’s Expanded Unconscious**

Autistic Thinking. Central to Bleuler’s conceptualization of schizophrenia were the disturbances of association he had seen in his patients (Bernet, 2006; 2013). He termed the hallucinations and delusions that sometimes claim their minds “autistic thinking” or “autism” (Bleuler, 1911). Logically, such thoughts are nonsense. They deviate from normal thinking because they are dominated, not by reality, but by emotion. Yet some show “understandable interconnections”. He stressed that, while they contain “illogical patterns, . . . in each individual case, they are the expression of one or more specific complexes that in them reach their fulfillment or seek the reconciliation of contradictions with their surroundings.” Through what seems chaos, patients’ thoughts could be connected to understandable goals. Bleuler wrote: “Autistic thinking is therefore tendentious. It feigns the fulfillment of wishes or strivings; it thinks away hindrances and rethinks impossibilities into possibilities and realities. The goal is thus reached, that associations corresponding to the striving are channeled . . . through the . . . operation of affect” (both quotes, Bleuler,1912, p. 3, p. 4).

Bleuler understood healthy minds through the lens of his acute observations of psychopathology.  In 1911, in his classic elaboration of schizophrenia, he alluded to autistic thinking in normal minds. In 1912, he then explored the similarities and differences between autism occurring in psychopathology and in health.  In the healthy, autism is apparent in dreaming, daydreams and fantasies, mythology, religion, and poetry. In both health and pathology, it exhibits gradations in intensity that vary in the amount of autism expressed. At its best, orderly healthy thought—he termed it “realistic thinking”—reflects sensed experience. But autism often reappears, as affective ideas associated with certain event complexes exaggerate their weight. In health and pathology, these reconfigured complexes can be felt as goals enacted by “goal ideas accentuated by pleasure or unpleasure” (Bleuler, 1912, p. 10).[[9]](#footnote-9)

Contrasting the features of purely realistic thinking with those of extreme autism could clarify how associative patterns shape normal thought. Though emotion dominates both, the two differ in their reflection of reality. Realistic thinking involves reasonably accurate perceptions of sensed events. Plus realistic thinking regulates its relation to the experienced world, while extreme autistic thinking—in dreams or psychoses—suppresses the outer world. Most importantly, normal adults usually distinguish between reality and fantasy. Schizophrenics often resist the world, treating their hallucinations as real; but normal adults usually know that their waking fantasies are imagined. They don’t mistake autistic thoughts for events; so normal autistic thoughts rarely function as intentions.

Bleuler’s account of autistic thinking is historically significant here in part because he presented the concept as an explicit challenge to Sigmund Freud. Bleuler’s paper on autism was published in the *Yearbook of Psychoanalytic and Psychopathological Research* (co-edited by Bleuler and Freud), the first psychoanalytic periodical (Falzeder, 2007). Appearing twelve years after Freud’s *Interpretation of Dreams*, the volume is surprising now for the prominence of Bleuler over Freud. Bleuler is the first named editor of the journal, and his is the lead paper (Freud’s follows at just one third the length). In it, Bleuler presents autistic thinking as a concept that, while incorporating some Freudian innovations, directly challenges Freud’s view of the unconscious. With it, he offers a more comprehensive approach to the unconscious derived from his own observations.

On many dimensions, Bleuler’s theory is the broader one. He extended it to all drives, describing the phylogeny of autistic thinking and stressing the relevance of acquired drives for evolution. His theory includes negative as well as positive emotions,[[10]](#footnote-10) and it proposes a neurocognitive structure to explain the pathology of emotionally-laden ideas and goals. Stressing the value of an approach to “affect in general,” Bleuler wrote: “The persecution complex does not simply create negative feelings, rather it forms itself in resonance with those already existing, however they would be executed further below. All are processes that can only be linked to the pleasure principle through long hypothetical detours, but by contrast easily and directly with emotional effects in general. So the contrast [with reality] remains incomplete if one sets the reality principle only against the pleasure-unpleasure principle and not all autistic thinkingin our broader sense” (Bleuler, 1912, p. 6-7).

Referring to Freud in the *Natural History*, Bleuler (1921b) stresses that associations bound to the adult personality are especially emotionally-toned. He then describes how his account differs from Freud’s. Ideas are not abruptly banished to the unconscious; rather, many gradations of suppression occur, ranging from simple dormancy to partial or complete amnesia. Again Freud’s concept was too narrow: “Freud only envisages the [lust] mechanism. I believe, however, that the concept [affect] represents a developing ensemble [genetisches Ganze] only in its broader version” (1912, p. 6). Bleuler was advocating a broader psychobiological integration of unconscious drives and emotional needs with unconscious as well as conscious cognition.

This interpretation is supported by a note in Bleuler’s 1912 classic (Bleuler, 1912, p. 1). In it, he asserted his priority on autistic thinking over Carl Jung’s concept of libido, which turns only inward to the mind. Bleuler and Jung had independently presented overlapping concepts in papers that both appeared in 1911. Bleuler’s note quotes Jung’s distinction between spontaneous introversions of libido and the directed verbal constructions of normal realistic thought. He then summarizes how their concepts differ: Verbal expression is common in schizophrenia, and disordered associations are often directed outward, to actual events. Bleuler is claiming priority on autism, which he contrasted with the similar “Freud/Jung concept.”

Bleuler’s Neural Energy. Bleuler’s concept of neural energy also challenged Freud. Freud’s abreaction refers to the discharge of long blocked “psychic” energy.  Linked to repression, the concept is foundational to psychoanalysis. With the “opportunity apparatus”, Bleuler (1921a) went beyond abreaction with his account the neural energy driving mind. He argued that assuming *only* blockage could not explain how energy and experience together are channeled into task-specific intents and outcomes.

 Bleuler (1921a, b) replaces abreaction with the switch-powered neural energy originating in reflexes and drives (see above). They generate the energy; but it then fluctuates with “all kinds of changes” involving the play and counter play of inhibition and facilitation in the dynamics of “the entire psyche” (Bleuler, 1921b, p. 283). Bleuler maintained that when subthreshold switching energy is transferred to activate an opportunity apparatus “we don’t know whether the result is elicited by the [force] of the last processed stimulus calling forth greater readiness in the nerve molecules for energy production or by the backing up of energy that finally “drains off” in the effector organ” (1921a, p. 672, his quotes). Neural energy surely often discharges without an “affective storm” (or a storm without abreaction), as associations trigger muscle contractions linked to goals.

Plus, unlike Freud’s single drive approach, Bleuler’s neural energy could sustain inhibition linked to any drive, powering a range of associative complexes that encompass all thought. He had often seen disordered opportunity apparatuses in his patients when traumatic memories (via inhibition) blocked well-ordered outcomes. His observations of their tendencies “to again and again relive . . . certain affective events” suggested that the unconscious operates “particularly energetically in pathological cases, without thereby taking energy away from consciousness” (1921b, p. 280, p. 283). Plenty of energy was available for more structured outcomes.  On this point, Freud was just wrong.

Just a year after his autism paper appeared, Bleuler (1913) published a more extensive critique of psychoanalysis. Its tone is striking because his strong criticism is regularly punctuated with praise of Freud (Küchenhoff, 2006). He is at times even apologetic, noting that, though his view is more negative than it previously was, Freud had developed the theory solely from his clinical findings. Had he instead begun “from a foundation [genetisch], much of what surprises or appears peculiar would be more plausible” (Bleuler, 1913, p. 666). Bleuler nonetheless, expresses “huge doubts” stemming, he wrote, from “lack of clarity, incompleteness, and contradictions” (1913, p. 668). He reiterates the inclusion of negative affect and his objection to a single drive, now stressing phylogenetic grounds: It seemed impossible that “the lust that . . . serves the satisfaction of other drives (drinking mother’s milk), would be primarily a sexual [lust] . . . . As a normal phenomenon, autoerotism also offers no justification for existence.” So, though he agreed that unconscious sexual feelings are involved in psychopathology, their role is not exclusive. An evolved drive like sucking “is also bound to pleasure; and the child receives a part of this pleasure when it sucks on anything” (both quotes, 1913, p. 681).

Bleuler also rejects Freud’s too disparate view of the relationship between the unconscious mind and the conscious mind. This includes Freud’s “layered system of entities”—id, ego, and superego (unconscious inhibitory engrams could more simply explain censoring), the idea of infantile sexuality, and the therapeutic utility of dream analysis. Sleep thought [Schlafdenken], he wrote, could never be as useful in treatment as a waking dual-engram unconscious in which affect can be “chained to objects by the laws of association” (p. 683).

Not much was left. Yet, Bleuler accepts Freud’s emphasis on sexual resistance (but not exclusively as repression), and he ends his critique with a statement of the broad value of Freudian concepts: “As you see, my critique appears at first to completely smash Freud’s complex construction. But with more precise examination, one finds in what remains so many correct observations as useful building blocks and so many ingenious architectonic ideas that it would be frivolous to indiscriminately repudiate all together” (1913, p. 718).[[11]](#footnote-11) Bleuler himself, of course, was using many of those building blocks.

The Falling Out. Initially, Bleuler’s reaction to Freud had been supportive. Indeed, it was Bleuler who introduced Jung to Freud’s theory (Möller, Scharfetter, and Hell, 2003). Bleuler knew and was impressed with Freud’s early aphasia research (Küchenhoff, 2006). He had taken over a premier psychiatric clinic just as Freud, well-trained in the Helmholtz physicalist tradition, emerged on the clinical scene. And Bleuler’s attention meant a great deal: Freud was pleased that a university psychiatrist and professor had expressed support (Hell, 2000; Küchenhoff, 2006; Dalzell, 2007).

The two began corresponding in 1904. Jung publicized the Burghölzli’s interest in Freud when, in 1907, he defended Freud at a conference. At the time, Bleuler and Jung were exploring how unconscious trauma helped explain psychopathology.[[12]](#footnote-12) Bleuler wrote Freud that schizophrenia has become “a panegyric for your ideas” (quoted in Falzeder, 2007, p. 344). Freud was even analyzing Bleuler’s dreams by correspondence. Falzeder suggests that this was a kind of test—even a threat. The outcome of the analyses would determine Bleuler’s assessment of psychoanalysis. It could indeed have. Bleuler later wrote that psychoanalysis “is neither a science nor a craft. . . . It is an art. . . . Isn’t it stupid that I, with my little experience, still have doubts” (quoted by Falzeder, 2007, p. 355).

But in 1908, a controversy at a meeting of psychoanalysts over their differing interpretations of schizophrenia eventually led to a break. Jung had organized the meeting; and he presided over the society in 1910, when its name was changed to the International Psychoanalytic Association (IPA) and its office moved to Zurich. The issue troubling Bleuler was the IPA’s statues (framed by Jung), which had explicitly prohibited dissent. Rejecting them as “harmful to science,” Bleuler resigned from the Zurich branch of the IPA. Disappointed, Freud tried to persuade him to return, even implying that he would use his influence to change things in Bleuler’s favor (Küchenhoff, 2006). But in 1911, when Jung refused to permit H. W. Maier, then senior physician at the Burghölzli, to participate in the meeting, Bleuler resigned permanently (Möller, Scharfetter, and Hell, 2003; Falzeder, 2007).

Bleuler wrote Freud explaining his first resignation: “[I]f one wants to present oneself to the public as a scientific association, one cannot make dissent impossible beforehand.” This followed his final resignation: “It is the *type* of association that is harmful. Instead of trying to have as many points of contact as possible with the other sciences and scientists, it has shielded itself against outside influences” (Bleuler’s italics, quotes from Falzeder, 2007, p. 361, p. 362; see Küchenhoff, 2006, p. 45, for the entire letter). Küchenhoff renders the complete letter in which Bleuler wrote that the policy “injures friend and enemy.” In Zurich, Bleuler noted, doctors’ interest in psychoanalysis was being “quashed” by it. But Freud was resistant to any change brought by evidence, and Jung obeyed the master. Bleuler and Freud met several times; and though they remained cordial and corresponded sporadically until 1937, in 1913, Bleuler resigned as co-editor of the *Yearbook of Psychoanalytic and Psychopathological Research*.

Freud brought much that was absent in the Forel tradition—emphasis on the unconscious, the concept of repression, the clinical effects of trauma, and, of course, drives. But Bleuler consistently asserted his own position (Küchenhoff, 2006).[[13]](#footnote-13) Falzeder notes that Manfred Bleuler stated that at the clinic’s weekly meetings “the main topic of discussion was the application of Freud’s theories to schizophrenia (2007, p. 349).” Jung’s habilitation had indeed been done within the psychoanalytic framework (Möller, Scharfetter, and Hell, 2003). So Freud was surely discussed. But did the discussions contrast the opportunity apparatus with abreaction? Did they compare the “artistic” flavor of Freud’s theory with the evidence supporting Bleuler? [[14]](#footnote-14) Freud had shown the significance of both the unconscious and psychogenesis. But the issue of evidence was fundamental. Bleuler would not abandon objectivity. Plus, he believed the evidence was on his side.

**Objectivity: Pavlov and Bekhterev**

In the first edition of his textbook, *Lehrbuch der Psychiatrie* (1916), Bleuler summarizes the psychological guidelines underlying his approach to psychopathology. His functionalism, the centrality of memory, the importance of association, and his identity theory are all there, if not yet explicit. And here Bleuler’s long-standing focus on association invokes Ivan Pavlov. Citing Pavlov, he claims that many associations are uniquely psychic, and all function like reflexes: They set themselves into action, released either as preformed or highly practiced reactions. This, he wrote, was “experimentally proven in sundry central nervous system processes.” Plus Pavlov had shown that these reflexes are plastic. Bleuler wrote: “Pavlov’s “association reflexes” (conditional reflexes) move admittedly only over the cortex, which alone is capable of such plastic function in pronounced measure . . .” (both quotes, Bleuler, 1916, p. 16, his quotation marks). But another aspect of Pavlov’s work is just as significant for Bleuler’s account of human nature: the importance of objectifying the change. Pavlov had shown that as reflexes transfer their evoking power to other stimuli, associative processes trigger memories that are manifest in behavior (Todes, 2002). So Bleuler consistently cited examples of Pavlovian outcomes to support his claims.[[15]](#footnote-15)

But there were problems. Working in the Russian evolutionary tradition, Pavlov assumed that reflexes are purposeful, even in his dogs. But his critics challenged this interpretation (Todes, 2014, Chapter 17). In 1898, Pavlov’s *Lectures on the Work of the Digestive Glands* appeared in German along with some of the criticisms. So Bleuler likely knew of Pavlov’s purposeful interpretation and its critics. Vladimir Bekhterev, Pavlov’s colleague and later competitor, was one of those critics. Todes (2014, Chapter 23) describes the dispute between the two that began with Bekhterev’s proposal for a new objective psychology based in “associative reflexes” (Bekhterev’s phrase) that are expressed in animal movement. He rejected Pavlov‘s purposeful approach; and by 1907, Pavlov and Bekhterev were refuting each other’s research.

Bekhterev had discovered that associative centers in the cortex are linked to conditional movements at about the time the neural basis of Pavlov’s salivation work was challenged by endocrinologists. Bleuler probably realized that Bekhterev’s approach could give him all he needed without Pavlov’s purposeful baggage—just what he sought to eliminate. Shifts in Bleuler’s references to conditioning confirm this. His 1916 textbook cites only Pavlov on the conditional reflex. In the 1921 edition of the *Natural History*, he refers to conditional reactions as “the Pavlov-Bekhterev studies of association reflexes” (1921b, p. 78). In the 1932 edition, Pavlov is still cited, but Bleuler explicitly sides with Behkterev.

Reminding readers that the link between the will and muscle contractions is hidden from consciousness, he repeats an oft used example of a burned child retracting his finger at the sight of flames. But here Bleuler cites only Bekhterev: “We know that these releases of reflex are a result of memory; and in higher animals move over the cortex. . . . Bekhterev can also interpret thinking as an association reflex without *resorting to an error* simply with an entirely comprehensible extension of the concept of association reflexes” (Bleuler, 1932, p. 64, my stress). Without directly refuting the 1904 Nobel laureate, Bleuler implies that Pavlov had committed the incomprehensible error of teleology.[[16]](#footnote-16)

Todes (2014, p. 324) notes that Bekhterev’s goals for an objective psychology “more clearly resembled those of the American behaviorists than they did Pavlov’s.” Indeed, Bleuler’s appreciation of their significance may have been influenced by his American contacts. In 1908, the psychologist John Watson, a founder of American behaviorism, joined the Johns Hopkins University. By 1916, Watson’s laboratory was housed in Hopkins’s Phipps Psychiatric Clinic. The Clinic’s director was the Swiss-American psychiatrist Adolf Meyer (Lidz, 1966; Leys, 1984; Lamb, 2014), Bleuler’s former Zurich colleague. Meyer too was a Forel student, and before Bleuler became clinic director, the two men overlapped at the Burghölzli. In 1913, at Meyer’s invitation, Bleuler traveled to the US to present his ideas at a celebration of the opening of the Phipps Clinic, where he likely met John Watson.[[17]](#footnote-17)

Pavlov and Bekhterev are central here for two reasons. The associative transfer of engrams and emotion to new situations pervades all of Bleuler’s thinking. Reflexes are functionally plastic—their effects extend to new experience through stored engrams. Second and significant in light of the Freud break, is Bleuler’s focus on outcomes. Bekhterev’s framework gave Bleuler the objectivity he demanded to conclude the identity of bodily physiology and the subjectivity of mind. Bleuler was familiar with the science of synapses and refractory periods; but he knew that good neural measurements were not yet available. Yet even without them conditional reflexes could provide solid “realistic” evidence—as close to fact as one could get. With it, his theory could confirm that engrams ensure adaptation via the integration of phylogeny with individual experience, as thought-goals dictating outcomes are switched in and out of consciousness. Not intentions, but neural energy powers the mnemic integration of ideas tied to pleasure and pain.

Bleuler believed that his argument had demonstrated several important truths. First, psychic qualities are not unique to higher organisms. Earthworms, ants, and protozoa exhibit the same elementary unity of reflex and psyche as humans and higher mammals. Unless we deny evolution, Bleuler wrote, “we must view psyche in its most complex form in humanity as a gradual evolution of functions already present in the lowest organism” (Bleuler, 1931, p. 60). Second, the expediency manifest in the unity of reflex and psyche does not depend just on neural tissues. Bleuler cited research on earthworms learning the correct route to food. If, after learning, the worms are divided into parts, those without heads still find the food. Expediency exists in all cells. This makes equating psyche and consciousness “compared to facts, useless” (Bleuler, 1931, p. 59). Finally, in higher organisms the universals of life involve complex functional unions of cortical with peripheral processes, which only appear separate from mind. With a psychoide unified by life’s formula into a “precise system of expediencies” (1925, p. 19), Bleuler’s objectification of mind-body identity was complete.

## **Consolidating the Zurich School: Wundt and The Germans**

Each of Bleuler‘s later works criticize the “new” scientific psychology that had emerged in the 1880s. This was the case early on as well. Psychologists had paid too much attention to an atomistic approach to consciousness explored using experimentation, an analytical method first introduced by Gustav Fechner and Wilhelm Wundt (Danziger, 1990; Heidelberger, 2004; Fahrenberg, 2018). Empirical psychologists had taken the senses as their sole bodily focus and overstated the role of consciousness. But Wundt had relied on an equally dangerous concept that, for Bleuler, undermined psychology as a natural science. He advocated psychophysical parallelism, a view that sees mind and body as two parallel sequences, usually treated separately. Arguably just as problematic, Wundt was Emil Kraepelin’s mentor; and Kraepelin, who had worked in Wundt’s laboratory and continued conducting psychological experiments, was extending Wundt’s approach into psychiatry (Engstrom, 2003; Decker, 2004; De Kock, 2018, 2020; Engstrom and Kendler, 2015).

In 1906, Bleuler challenged the prominence of psychophysical parallelism in psychology. His critique (Bleuler, 1906b) appeared in one of the premier psychology journals of the time. His tone is less harsh than it later became; and raising the issue in a psychology journal suggests that Bleuler was warning the discipline against an idea that many had accepted from Wundt. He criticized Wundt’s psychic causality, which Wundt had linked to the mental process of apperception. Despite Wundt’s empiricism, Bleuler wrote, “[t]he benefit of proclaiming such a principle is however less, especially because . . . not only does the physical series go over to the psychic, but the latter also goes to the physical, and Wundt fixes a separate psychic causality. . . . [The] concept and even more its designation . . . lead to confusions and to connections with similarly named metaphysical principles of cause that here we must take a stand against” (1906b, p. 15).

Apperception is at the center of Wundt’s view of consciousness. He presented it as a higher order synthetic process “that coordinates and regulates lower-level associative activity and integrates disparate elements of experience and thought into a unitary experience” (De Kock, 2020, p. 389). His mature view of apperception defines it as a “volitional focusing of attention” that guides human action toward the accomplishment of goals.[[18]](#footnote-18) Wundt’s parallelism explicitly added “a *purposive* dimension” to mind (all quotes, De Kock, 2018, p. 275, her stress).

De Kock recounts Wundt’s concept of “motives” and his distinction between passive and active apperception. Though both forms involve will, they are perceived differently. Passive apperception entails no awareness “of self-determined or of autonomous activity” (De Kock, 2018, p. 275). It is instead motives and their competition during active apperception that “immediately indicate the direction and quality of the voluntary act which they precede (De Kock, 2018, p. 275, quoting Wundt, 1901/III),” yielding the choice (and the suppression) of conscious intent. Because of this, Wundt argued, “[t]he whole inner life of man appears as his own creation; . . . he regards himself as the originator of his own thought and emotions (De Kock, 2018, p. 277, quoting Wundt, 1901/III).” For him, that creation was the dominant organizing principle of the conscious mind.

Bleuler Answers Wundt. Wundt’s and Bleuler’s approaches were in some ways similar. Both were committed to synthesis, challenging exclusively atomistic approaches to mind; both drew on psyche and on physiology, inferring abstraction and inhibition; and both acknowledged that simple association helps define personality.[[19]](#footnote-19) But by the 1920s, parallelism was impeding Bleuler’s progress. In 1923, he noted that some critics of the *Natural History* said they would accept his account as long as it did not involve identity, but rather “physical “parallel appearances” of a psychic process in brain.” They insisted that the “actual psyche must somehow be essentially different (both quotes, Bleuler, 1923, p. 556, his quotation marks).” Natural scientists, he wrote, had been “almost silent (1932, p. 12)” on views of parallelism like his. So, as he revised the *Natural History*, he reiterated his rejection of parallelism and apperception, directly refuting Wundt.[[20]](#footnote-20)

To understand his challenge it is important to appreciate Bleuler’s attitude toward philosophy. He presented it in a reply to a critical review of the *Natural History*. In it, he notes that philosophers accused him of having employed “naïve, bad philosophy (Bleuler, 1923, p. 575).” He then devotes much of the paper to a stinging critique of the entire discipline. As an expert on disordered thinking, he wrote, he was in an excellent position to discredit the “huge obstruction” (p. 574) that is philosophy. Stressing the power of natural science to yield truth, he accuses philosophers of contaminating logic with their emotions: “[T]he entire apparatus . . . is set in motion in order to achieve the wished for “proof” (his quotes, 1923, p. 577).” He struck his greatest blow when he wrote that both philosophy and religion are forms of autistic thinking. Even Kant found “an autistic way out that originated only in apparent logic (1923, p. 578).” The philosophers’ comments had re-confirmed his view that “philosophy is at its root autistic thinking in the satisfaction of a complex (1923, p. 575).”

In the 1921 edition of the *Natural History*, Bleuler explained that many dualisms recognizing mind as something fundamentally different are fantasies introduced by philosophers and by “philosophical psychology”[[21]](#footnote-21) through metaphysics. His second edition explicitly linked this problem to Wundt, whose (in Bleuler’s view) autistic parallelism had placed the understanding of consciousness beyond the physical sciences. In 1932, Bleuler’s reference to Copernicus and the indisputability of the identity theory were re-positioned alongside a refutation of Wundt’s creative synthesis. He expected, he wrote, the naïve to have such thoughts; but even in scholars such dualistic views can be “fantasy (1921b, p. 10).” The fear of death or a longing for unrealistic justice must have led them to conclude that mind persists separately from the body. “Philosophy is good and natural science is good, but mixed they are a dish of garlic and chocolate (Bleuler, 1921b, p. 8).”

Bleuler’s objections to Wundt’s psychophysical parallelism can be organized around three issues. First and most damning is the link between apperception and psychic causality. Noting that Wundt also stated that unified impressions and ideas exist “everywhere in relation to the physical organization of the brain (cited by Bleuler, 1932, p. 17),” Bleuler nonetheless objects to a psyche that includes “higher unities with characteristics that are more than the sum of their parts (“creative synthesis”) [and] function without physical concomitants (1932, p. 12).” Discussing the dynamics of concentration in attention, he declared apperception false. He wrote: “The strengthening of vitality [Aktivität], of psychic energy, . . . *is* just stronger attention, it is not a consequence of the same.” He could explain disturbances of thought just as well via disrupted attention. Apperception, by contrast, makes “a new kind of psyche behind the common [one] and furnishes it with all the necessary artistries . . . taking them away from more peripheral functions such as perception and motility (both quotes, Bleuler, 1932, p. 192, his italics).”

The second issue stems from Wundt’s reliance solely on consciousness. This left no place for the all-important biological functions. It therefore ignores evolution and offers no means by which to achieve objective assessment. Bleuler contrasts this with processes such as practice and memory that “belong to the physical organism and especially to the CNS in the same manner as the psyche; and the mode of reaction to outer stimuli as that of spontaneity is physically and psychically identical.” To drive the point home, he cites Charles Sherrington’s analysis of reflexes, which showed that they too are integrated. Brain science had replaced a disappointing atomism using “Sherrington’s integration of different “physiological” apparatuses (both quotes, Bleuler, 1932, p. 19, his quotation marks).” Just as breathing is automatically controlled by a lack of oxygen, so psychic striving relies on a largely peripheral and preformed apparatus (psychoide). Wundt had rejected the unconscious (Araujo, 2012) and maligned Freud’s approach as “dream mysticism (Fahrenberg, 2018, p. 102).” But Bleuler’s dual-engram integration showed that natural science could establish a plastic and biological unity of the unconscious with consciousness.

Finally, Bleuler rejected Wundt’s approach to emotion (for Wundt, key to the link between apperception and will). Bleuler saw emotions as a result of “the organ stimuli that constantly flow into the brain.” Writing that he might have even overstated the importance of personality (above organs) in facilitating intention, Bleuler rejected Wundt’s alternative of a central self-consciousness [centralen Tätigkeitsgefühle]—the presumed quality of perceived intent. Compared to Wundt’s solution, which could only yield momentary episodes, Bleuler’s engram-based memories of emotion and action would unify to “form an enduring and important component of the person (both quotes, 1932, p. 43).”

Bleuler quotes Wundt‘s objection to older identity theories that were based in atomisms. Wundt wrote that he “would confront the interrelation of psychic processes themselves uncomprehendingly even if their relation to brain processes were as clearly before our eyes as the mechanism of clockwork (quoted in Bleuler, 1932, p. 25).” Bleuler objected that Wundt’s criticisms were aimed at the associative mechanisms of men like J. F. Herbart, not at a holistic system like his that focuses on unified perceptual complexes and their abstractions. With it, one would “quickly notice what kind of brain process corresponds to a perception, a concept, a seething [sic] and could then also recognize thought configurations with nothing further added.” It is just not the case, he wrote, that “*all psychological and neurophysiological processes appear reciprocally incommensurable to us* (both quotes 1932, p. 25, his italics).” We can directly identify many, “so it cannot be otherwise. . . that we could express psychic interrelations completely well in physiological-physical concepts or conversely . . . explain or derive . . . psychic processes from our knowledge of brain function (1932, p. 25-26).” In this way, “we would see whether consciousness in general were there and . . . whether the process were precisely conscious or not (1932, p. 25).” All he required was that “*the laws of central neural functions be those of the psyche and conversely* (1932, p. 17, his italics).” Roughly four decades earlier, this was just what Wundt had rejected. Or had he?

Wundt’s Anti-metaphysical Heuristic. In fact, Wundt explicitly rejected metaphysics (De Kock, 2018; Fahrenberg, 2018). Psychically the volitional characteristic of active apperception is accompanied by a distinct “feeling of activity [Tätigkeitsgefühl],” while passive apperception yields only a sense of “passivity (De Kock, 2018, p. 275).” His “psychological” voluntarism therefore assumes the perceptual “consciousness of unity (De Kock, 2018, p. 277, her quotes)”—one’s felt experience of expectation, strain, and/or relief. Wundt’s parallelism is based in a conceptual heuristic—his schematics specifically model how the “apperception system” operates in the brain (Kim, 2016; De Kock, 2018, p. 279; Fahrenberg, 2018, p. 72). He even proposed neural inhibition as the “physiological substrate” of active apperception (De Kock, 2018, p. 278).

In volume three of *Principles of Physiological Psychology* [*Grundzuge physiologischen Psychologie*], Wundt compares his heuristic to the metaphysical views of Descartes, Leibnitz, and Spinoza: “Parallelism as a heuristic principle has by contrast absolutely nothing to do with such an other-worldly [überwirklich] backdrop to the world of phenomena. It is simply the assignment of the immediately given unity of body and mind to a division of labor implemented in the natural sciences and in psychology. It extends therefore neither to the original unity nor to the special considerations that emergefrom it.” He believed that pursuing any metaphysical parallelism could only lead to “a metaphysical psychology (1911, both quotes, p. 749).” Why had Bleuler ignored such a clear statement of Wundt’s non-metaphysical approach?

In his early critique of psychophysical parallelism, Bleuler (1906b) had indeed noted Wundt’s claim of a “psychologically empirical” parallelism. But he could not reconcile it with Wundt’s continued use of a purely psychic causality.  To Bleuler, this “defect” meant that an empirical heuristic had been “combined and confused with metaphysical principles of the same name (1906b, p. 15),” making it no less objectionable than they are.  Presumably for this reason, in 1932, Bleuler did not comment on Wundt’s heuristic. The offending metaphysics were still there.

Bleuler had attacked the source—Wundt. But the subtleties of Wundt’s philosophy may have been less important to him than neutralizing Wundt’s successors—Kraepelin and his students—who brought Wundt’s notion of psychic causality into psychiatry and were supporting it experimentally. Kraepelin’s influential advocacy of experimentation in psychiatry endorsed a method that could not possibly serve the kind of synthesis that he required. To Bleuler, for whom psychology was “a part of biology, nothing more, nothing less (1921b, p. 323),” engrams made any causal division of labor between biology and psychology obsolete. Psychiatry—a field in which medical school examinations were often based in Kraepelin’s textbook (see Heckers and Kendler (2020)—was being distorted by the “confusion” Kraepelin had inherited from Wundt.

Saving Psychiatry. Bleuler offered the possibility that psychiatry could cure, rejecting degenerationism and the custodial practices of asylums. Though he viewed the primary symptoms of schizophrenia as the result of a hereditary predisposition for the disease (Kendler, 2020), the secondary signs are psychogenic (Bleuler, 1926, 1930). The two are often mixed; but because they depend on “agitation from outer causes,” the secondary symptoms can be changed. Cases varied in the proportion of each type. In the early stages of schizophrenia, for example, though they cannot cause the disease, “all hysterical symptoms are purely psychogenic.” But timing is important: Bleuler estimated that if acute schizophrenia were treated during a “standstill . . . afterwards the more difficult processes too could leave a fully capable brain with just a few features still hinting at a past storm.” Acute cases with a standstill “could still improve after ten or twenty years (all quotes, Bleuler,1926, p. 29).”

Kraepelin’s view that psychopathology represents disorders of will risked jeopardizing this workable, if limited, psychogenesis. Decker (2004) quotes Kraepelin’s *Dementia Praecox and Paraphrenia*: “With the annihilation of personal will, the possibility of further development is lost, . . . (Decker, 2004, p. 256).” [[22]](#footnote-22) Roelcke (1999, p. 99) further shows that Kraepelin’s nosology, which “hardly allowed derivation for therapeutic intervention or prevention,” was not a result of his clinical observation. It was an early presumption of his experimental program. Plus, by the 1890s, Kraepelin had not just used, but was an influential advocate for laboratory methods in psychiatry. He edited a journal (entitled *Psychologische Arbeiten*) devoted to publishing his students’ preliminary work. In the first issue, he details the methods devised by Wundt and Fechner, lauding their rapid international growth in psychiatry (Kraepelin, 1896). New laboratories had been founded by Kraepelin students across Europe, but “above all” in the US. There experimental psychology had developed “with a veraciously American velocity” as “large three-story palaces” include “lavishly equipped labs (Kraepelin, 1896, p. 3).” [[23]](#footnote-23)

Citing their close relationship, De Kock (2018) stresses how deeply Wundt influenced Kraepelin. In *Dementia Praecox*, he grouped “schizophrenic disorders” within dementia praecox, noting that “injured “active apperception” signifies the domain of volition over the formation and course of psychic processes.” Without it “the train of thought will not proceed systematically to a definite aim . . . (both quotes, De Kock, 2018, p. 288, citing Kraepelin, 1907).”  But Kraepelin’s advocacy of experimental methods was just as dangerous. Worse than retaining his disease concept, he had positioned it (and schizophrenia) within and derived it from an inadequate experimental framework. To Bleuler, Kraepelin’s advocacy of experimentation and his reliance on will would damage both the discipline and the health of his patients.

De Kock (2020) notes the historical tension between the German tradition of apperceptionism and that of British Empiricism as approaches to mind: “[I]dentifying oneself as an apperceptionist, . . . implied distancing oneself . . . from pure ‘associationism’ (p. 389).” Bleuler shows us that the reverse can also be the case: By successfully challenging Wundt’s and Kraepelin’s use of apperception, Bleuler’s identity theory and his engrammatic synthesis would sustain the both treatability of mental illness and the plasticity that he saw at the core of evolution and human nature. They would consolidate the Burghölzli school around his mnemic alternative.

**Life versus Chemistry**

Bleuler’s reliance on memory as foundational to life versus non-life courted a kind of vitalism. Referring to psychoide, Daniel Hell (2000) terms Bleuler’s view a “vitalistic-naturalphilosophical theory (p. 46).” Yet Bleuler believed that, objectified by the drive-based impetus of psychoide and Bekhterevian plasticity, he had rendered a completely physicalist account. Coordinated adaptive reactions based in unified memories of past experience are the “signposts for future reactions (Bleuler, 1925, p. 5).”

Their unity led Bleuler (1931) to contrast the mnemism of biology with the mechanism of the physical sciences. He quotes Jakob von Uexküll, who wrote: “[L]iving matter must necessarily behave differently than dead matter.” But Bleuler adds that “the most precise copy of the combination of atoms in a living being would truly depict its body, but not as an alive reacting [body] (both quotes, p. 80).” The body’s chemical constitution has “a kind of influence” through the available building materials. But it becomes the means to a goal only indirectly when “chosen by a master builder”—as engram complexes guided by psychoide “direct all vegetative and sub-psychic animal functions (Bleuler, 1931, p. 91).”

Using the example of digestive function, Bleuler describes the reflexes “that manage the secretions and the movements of the stomach, but not the chemical processes producing enzymes that follow only chemical laws.” Again explaining that any simple need must accommodate all circumstances required by a wider functional outcome, he stressed the continual formation of new interconnected sub-goals, the outcomes of which “are switched in chains one after the other.” In the process, chemical reactions occur as smooth muscles, striated muscles, and secretions are triggered in sequence. But Bleuler assumed that biological reflexes become independently self-reliant as the vast numbers of interconnections make each “influenced by others and influencing them (both quotes, Bleuler, 1931, p. 91).” Compared to the “aimlessness and unlawfulness of chance, we have the development of organs and functions according to “needs” and further evolution . . . upon and through [their] use (his quotes, 1931, p. 81).” Chemical processes, however, readily occur outside the organic interaction “as simple reactions in a test tube.” The key difference is psychoide, which “as unity never finishes existing, guiding, promoting the interests of the organism (1931, p. 91).”

While Bleuler acknowledged that physics and chemistry are important in the body, their lawful regularities could never dictate vital function. They are unable to bring the past into the present. He put it succinctly when elaborating expediency in the body: “[T]he concept of expediency, and of purposefulness [Zielstrebigkeit], is to understanding and depicting in biology just as necessary as that of finality in psychology and that of causality in chemistry and physics (Bleuler, 1931, p. 87).” Three patterns of regularity define three distinct domains of influence, all physical, but with sufficiently different degrees of complexity and plasticity that they require different depictions. Some causes, especially those determining “the inscribed phylogenetic and ontogenetic past,” are virtually “incalculable (1931, p. 82-83). But with knowledge, they can be abstracted as the ““autonomous lawfulness of the living,” but not unlawfulness [Gesetzlosigkeit] (Bleuler’s quotes, 1931, p. 83).” [Ins: For such abstractions of Bleuler mind/body function, though complex, operated as natural laws.]

So, given the dynamics of adaptation in the functioning body, the better analogy was between the finality of mind and the expediency of psychoide. Bleuler’s argument courts circularity as it always returns to the plasticity, cooperation, and unity of function powered by phyloengrams and their cognitive supplements. Epistemically it has a vitalist tinge, but ontologically, for him, there was none. Had he introduced an autonomy to life reminiscent of Wundt’s voluntarist heuristic? Perhaps, but more significant for Bleuler was understanding the abstraction process and complementing the rigidity of neo-Darwinism’s chance with a coordinated bodily expediency linked to mind. Life required the plasticity of memory; but for others, the autonomy of psychoide (and ergie) could be interpreted as a nod to vitalism.

Conclusion. Bleuler developed his approach as a workable alternative to those of Freud, Wundt, and Kraepelin. But personal concerns too, may have motivated him. Several sources (Hell, 2001; Apelt-Riel, 2009; Letsch, 2013) describe Bleuler’s care and concern for his older sister, Pauline. From her early twenties, Pauline suffered from mental illness—in the late 1870s (before her institutionalization), Bleuler force fed her when she refused to eat. Letsch (2013) writes that even after Pauline’s illness began, he had still hoped to pursue the study of classical languages. Instead he entered medicine; and Letsch and Hell both suggest that his interest in hereditary dispositions to psychoses extended to the fear of a hereditary taint in the Bleuler family. Bleuler and his cousin wrote an extensive genealogy of the Bleuler family (published under a pseudonym) that covered “peculiarities of character, possible mental illnesses, and the emergence of alcoholism (Letsch, 2013, p. 249).” Coupled with Bleuler’s late age of marriage (at 44), Letsch interprets the work as evidence of this fear. But his later works are founded on a plasticity in heredity and thought that could even produce novelty—a perspective that may have eased that fear. At age 64, when Bleuler’s *Natural History* first appeared, his elevation of mnemism to a philosophy of science may also have been relevant to a nagging family problem.

Bleuler’s criteria for truth were steeped in a nineteenth century view of natural science—in evidence that could ensure near certain fact. But even with one foot in the past, he reached into the twenty-first century when he assumed that mind, genes, and behavior are plastic instantiations of changing complexes. With phyloengrams and unconscious expediency, he built a theory of unified evolutionary adaptations responsive to the ever-changing conditions of life.

**References**

Apelt-Riel, S. (2009). Der Briefwechsel zwischen Ludwig Binswanger und Eugen Bleuler von 1907–1939 im Spannungsfeld von Psychoanalyse und Psychiatrie in der ersten Hälfte des 20. Jahrhunderts. Doctoral Dissertation, Eberhard-Karls-Universität Tübingen.

Araujo, S. (2012). Why did Wundt abandoned his early theory of the unconscious? *History of Psychology* 15: 33-49.

Banks, E. (2010). Neutral monism reconsidered. *Philosophical Psychology*  
23 (2): 173–187.

Bernet, B. (2006). Assoziationsstörung. Zum Wechselverhältnis von Krankheits- und Gesellschaftsdeutung im Werk Eugen Bleulers (1857-1939). In H. Fangerau and K. Nolte, (Eds.), *„Moderne“ Anstaltspsychiatrie im 19. und 20. Jahrhundert—Legitimation und Kritik*. Stuttgart: Franz Steiner Verlag, pp. 169-194.

Bernet, B. (2013). *Schizophrenie. Entstehen und Entwicklung eines psychiatrischen Krankheitsbilds um 1900*. Zürich: Chronos Verlag.

Bleuler, E. (1894). Versuch einer naturwissenschaftlichen Betrachtung der psychologischen Grundbegriffe. *Allgemeine Zeitschrift der Psychiatrie und psychisch-gerichtliche Medizin* 50: 133-168.

Bleuler, E. (1905). *Unbewusste Gemeinheiten*. Munich: E. Reinhart, pp. 1-40.

Bleuler, E. (1906a/1907). Freud’sche Mechanismen in der Symptomatologie von Psychosen. *Psychiatrisch-neurologische Wochenschrift* 8 (36): 316-318, 323-325, 338-340.

Bleuler, E. (1906b). Psychophysischer Parallelismus und ein bisschen andere erkenntnistheoretisch. *Zeitschrift für Psychologie und Physiologie der Sinnesorgane* 41: 15-27.

Bleuler, E. (1911). *Dementia praecox oder Gruppe der Schizophrenie*n. Leipzig: F. Deuticke. [Bleuler, E. (1950). Dementia Praecox or the Group of Schizophrenias. International Universities Press.]

Bleuler, E. (1912). Das autistische Denken. *Jahrbuch für psychoanalytische und psychopathologische Forschungen* IV: 1-39.

Bleuler, E. (1913). Kritik der Freudschen Theorie. *Allgemeine Zeitschrift der Psychiatrie und psychisch-gerichtliche Medizin* 70: 665-718.

Bleuler, E. (1917). Mendelismus bei Psychosen, speziell bei der Schizophrenie. *Schweizer Archiv für Neurologie und Psychiatrie* 1: 19-40.

Bleuler, E. (1920). Zur Kritik des Unbewußten. *Zeitschrift für die gesamte Neurologie und Psychiatrie* 53: 80-96.

Bleuler, E. (1921a). Über psychische Gelegenheits-Apparate und Abreagieren*. Allgemeine Zeitschrift für Psychiatrie* *und* *psychisch-gerichtliche Medizin* 76 (6): 669-698.

Bleuler, E. (1921b/1932). *Naturgeschichte der Seele und Ihre Bewußtwerdens*. Berlin: Julius Springer.

Bleuler, E. (1923). Biologische Psychologie. *Archiv für die gesamte Psychiatrie und Nervenkrankheiten* 83: 554–585.

Bleuler, E. (1925). *Die Psychoide als Prinzip der organischen Entwicklung*. Berlin: Julius Springer.

Bleuler, E. (1926). Zur Unterscheidung des Physiogenen und Psychogenen bei der Schizophrenie. *Allgemeine Zeitschrift für Psychiatrie* *und* *psychisch-gerichtliche Medizin* 84: 22-37.

Bleuler, E. (1930). The physiogenic and psychogenic in schizophrenia. *American Journal of Psychiatry* 10: 203–211.

Bleuler E. (1931). *Mechanismus—Vitalismus—Mnemismus*. Berlin: Julius Springer.

Bleuler E. (1934). Vererbung erworbener psychischer Eigenschaften? *Wiener medizinische Wochenschri*ft 26: 1-16.

Bleuler, M. (1951). Geschichte des Burghölzlis und der psychiatrischen Universtätsklinik. In Regierungsrat des Kantons Zürich (Ed.), *Züricher Spitalgeschichte*, Vol II. pp. 377-425.

Bleuler, M. and Bleuler, R. (1986). Dementia praecox oder die Gruppe der Schizophrenien: Eugen Bleuler. *British Journal of Psychiatry* 149: 661-662.

Dalzell, T. G. (2007). Eugen Bleuler 150. Bleuler’s reception of Freud. *History of Psychiatry* 18 (4): 471-482.

Danziger, K. (1990). *Constructing the Subject. Historical Origins of Psychological Research*. New York: Cambridge University Press.

Decker, H. S. (2004). The psychiatric works of Emil Kraepelin: A many-

faceted story of modern medicine. *J. History of the Neurosciences* 13 (3): 248-276.

De Kock, L. (2018). On making sense: an exploration of Wundt’s apperceptionist account of meaningful speech. *J. History of the Behavioral Sciences* 54 (4): 272–292.

De Kock, L. (2020). ‘I think’ (the thoughts of others). The German tradition of apperceptionism and the intellectual history of schizophrenia. *History of Psychiatry* 31 (4): 387-404.

Dubach, R. (2007). Zur „Sozialisierung“ einer medizinischen Massnahme: Sterilisationspraxis der Psychiatrischen Poliklinik Zürich in den 1930er Jahren. In M. Meier, Bernet, B., Germann, U. (Eds.), *Zwang zur Ordnung. Psychiatrie im Kanton Zürich, 1870-1970*. Zürich: Chronos Verlag, pp. 155-190.

Engstrom, E. (2003). *Clinical Psychiatry in Imperial Germany: A History of Psychiatric Practice*. Ithaca NY: Cornell Press.

# Engstrom, E. J. and Kendler, K. S. (2015). Emil Kraepelin: Icon and Reality. *American J. Psychiatry* 72: 1190-1196. doi.org/10.1176/appi.ajp.2015.15050665

Fahrenberg, J. (2018). *Wilhelm Wundt (1832-1920)*. Lengerich: Pabst.

Falzeder, E. (2007). The story of an ambivalent relationship: Sigmund Freud and Eugen Bleuler. *Journal of Analytical Psychology* 52: 343-368.

Forel, A. (1894). *Gehirn und Seele* (fourth edition). Bonn: Emil Strauss.

Forel, A. (1910). *Gehirn und Seele* (eleventh edition). Leipzig: Alfred Kröner Verlag.

Gliboff, S. (2006). The Case of Paul Kammerer: Evolution and Experimentation in the Early 20th Century. *Journal of the History of Biology* 39: 525-563.

# Gliboff, S. (2012). Monism and morphology at the turn of the twentieth century. In: Weir T. (Ed.), *Monism: Science, Philosophy, Religion, and the History of a Worldview*. Palgrave: New York, pp 135–158.

# Gliboff, S. (2013). The golden age of Lamarckism. In Gissis, S. and Jablonka, E. (Eds.), *Transformations of Lamarkism. From Subtle Fluids to Molecular Biology*. Cambridge: MIT Press, pp. 45-56.

# Graf-Nold, A. (1991). History of psychiatry in Switzerland. *History of Psychiatry* 2: 321-328.

# Guillery, R. W. (2005). Observations of synaptic structures: origins of the neuron doctrine and its current status. *Philosophical Transactions of the Royal Society of London B, Biological Sciences* 360 (1458): 1281–1307. DOI: 10.1098/rstb.2003.1459.

Harrington, A. (1996). *Reenchanted Science. Holism in German Culture from*

*Wilhelm II to Hitler*. Princeton NJ: Princeton University Press.

Heckers, S. and Kendler, K. S. (2020). The evolution of Kraepelin's nosological principles. *World Psychiatry* 19(3): 381–388.

Heidelberger, M. (2003). The mind-body problem in the origin of logical empiricism: Herbert Feigl and psychophysical parallelism. In P. Parrini and W. Salmon (Eds.), *Logical Empiricism: Historical and Contemporary Perspectives*. Pittsburgh: University of Pittsburgh Press, pp 1-22.

Heidelberger, M. (2004). *Nature from Within. Gustav Theodor Fechner and his psychophysical Worldview*. Pittsburgh: University of Pittsburgh Press.

# Hell, D. (2000). Eugen Bleulers Seelenverständnis und die Moderne. In T. Sprecher (Ed.), *Das Unbewusste in Zürich*. Zürich: NZZ Verlag, pp. 39-52.

Hell, D. (2001). Eugen Bleulers Herkunft, Kindheit und Jugend—Hintergrund für seine Lehre. In Hell, D., Scharfetter, C. and Möller, A. (Eds.), *Eugen Bleuler—Leben und Werk*. Bern: Hans Huber, pp. 19-27.

Hell, D., Scharfetter, C. and Möller, A. (Eds.), (2001). *Eugen Bleuler—Leben und Werk*. Bern: Hans Huber.

Jung, C. (Ed.). (1906). *Diagnostische Assoziationsstudien. Beiträge zur experimentellen Psychopathologie*. Leipzig: Barth.

Kammerer, P. (1909). Vererbung erzwungener Fortpflanzungsanpassungen. III. Mitteilung: Die Nachkommen der nicht brutpflegenden Alytes obstetricans. *Archiv für Entwicklungsmechanik* 28: 447–545.

Kendler, K. (2020). Eugen Bleuler’s Views on the Genetics of Schizophrenia in 1917. *Schizophrenia Bulletin* 46 (4): 758-764.

Kim, A. (2016). Wilhelm Maximilian Wundt. In E. N. Zalta (Ed.), *The Stanford Encyclopedia of Philosophy*. DOI: https://plato.stanford.edu/archives/fall2016/entries/wilhelm-wundt.

Kraepelin, E. (1896). Der psychologische Versuch in der Psychiatrie. *Psychologische Arbeiten* 1: 1-91.

Küchenhoff, B. (2006). Freud und Bleuler: Zur Geschichte der Beziehung zwischen Sigmund Freud und Eugen Bleuler. In H. Böker (Ed.), *Psychoanalyse und Psychiatrie*. Heidelberg: Springer Medizin, pp. 42-52.

Küchenhoff, B. (2008). The psychiatrist Auguste Forel and his attitude to eugenics. *History of Psychiatry* 19(2): 215-223.

Lamb, S. D. (2014). Pathologist of the Mind: Adolf Meyer and the Origins of American Psychiatry. Baltimore: Johns Hopkins University Press.

Letsch, W. (2013). Eugen Bleulers Herkunft und Jugendzeit. *Swiss Archives of Neurology and Psychiatry* 164 (7): 236-251.

# Leys, R. (1984). Meyer, Watson, and the dangers of behaviorism. *Journal of the History of the Behavioral Sciences* 20: 128-148.

# Lidz, T. (1966). Adolf Meyer and the development of American Psychiatry. *American J Psychiatry* 123: 320-332.

Logan, C. A. (2013)*. Hormones, Heredity, and Race: Spectacular Failure in Interwar Vienna*. New Brunswick NJ: Rutgers University Press.

Logan, C. A. (2015). Engrams and biological regulation: What was “wrong” with organic memory? *Memory Studies* 8 (2): 1-15.

Logan, C. A. (2017). Psychoneurosis beyond Oedipus: Neurophysiology, drive, and the resolution of emotional trauma. In “Perspectives on Human Regeneration,” *Palgrave Communications* 3: 22, 1-11.

Maatz, A. and Hoff, P. (2014). The birth of schizophrenia or a very modern Bleuler: a close reading of Eugen Bleuler’s ‘Die Prognose der Dementia praecox’ and a re-consideration of his contribution to psychiatry. *History of Psychiatry* 25 (4): 431-440.

Meier, M. (2006). Der „Fall Hägi“ am Züricher Burghölzli. Zur Reaktion von Psychiatrie und Behörden auf Kritik an staatlichen Anstalten. In H. Fangerau und K. Nolte, (Eds.), *„Moderne“Anstaltspsychiatrie im 19. und 20. Jahrhundert — Legitimation und Kritik*. Stuttgart: Franz Steiner Verlag, pp. 239-257.

Meier, M. (2009). Creating Order. A quantitative analysis of psychiatric practice at the Swiss mental institutions of Burghölzli and Rheinau between 1870 and 1970. *History of Psychiatry* 20 (2): 139-162.

Meloni, M. (2019). *Impressionable Biologies. From an Archeology of Plasticity to the Sociology of Epigenetics*. NY/Oxford: Routledge

Möller, A. and Hell, D. (1999). Das allgemeinpsychologische Konzept im Spätwerk Eugen Bleulers. *Fortschritte der Neurologie Psychiatrie* 67: 147-154.

Möller, A., Scharfetter, C., and Hell, D. (2003). Das “psychopathologische Laboratorium“ am „Burghölzli.“ Entwicklung und Abbruch der Arbeitsbeziehung C.G. Jung/E. Bleuler. *Nervenarzt* 74: 85-90.

Richards, R. (2009). *The Tragic Sense of Life. Ernst Haeckel and the Struggle over Evolutionary Thought.* Chicago: University of Chicago Press.

Mottier, V. (2005). From Welfare to Social Exclusion: Eugenic Social Policies and the Swiss National Order. In D. Howarth et al. (Eds.), *Discourse Theory in European Politics*. Palgrave MacMillan, pp. 255-274.

Roelcke, V. (1999). Laborwissenschaft und Psychiatrie: Prämissen und Implikationen bei Emil Kraepelins Neuformulierung der psychiatrische Krankheitslehre. In Gradmann, C. and Schlich, T. (Eds.), *Strategien der Kausalität. Konzeptionen der Krankheitsverursachung im 19. und 20. Jahrhundert*. Pfaffenweiter: Centaurus, pp. 93-116.

Schacter, D. (1982). *Stranger Behind the Engram. Theories of Memory and the Psychology of Science*. Hillsdale NJ: Erlbaum.

Scharfetter, C. (2006). *Eugen Bleuler, 1957–1939. Polyphrenie und Schizophrenie*. Zürich: Hochschulverlag.

Semon, R. (1904/1920). *Die Mneme* *als erhaltendes Prinzip im Wechsel des organischen Geschehens.* Leipzig: Englemann.

Semon, R. (1909). *Die mnemische Empfindungen in ihren Beziehungen  
zu den Originalempfindüngen*. Leipzig: Englemann.

Sleigh, C. (2007). *Six Legs Better. A Cultural History of Myrmecology*. Baltimore: Johns Hopkins University Press.

Spöring, F. (2014). Du musst Apostel der Wahrheit werden: Auguste Forel und der sozialhygienische Antialkoholdiskurs, 1886–1931. In J. Grosse, F. Spöring, and J. Tschurenev (Eds.), *Biopolitik und Sittlichkeitsreform: Kampagnen gegen Alkohol, Drogen und Prostitution, 1880–1950*. Frankfurt / New York: Campus Globalgeschichte, pp. 111–144. [?]

# Taschwer, K. (2016). *Der Fall Paul Kammerer: Das abenteuerliche Leben des umstrittensten Biologen seiner Zeit*. München: Hanser Verlag.

# Todes, D. (2002). *Pavlov’s Physiology Factory. Experiment, Interpretation, Laboratory Enterprise*. Baltimore: Johns Hopkins University Press.

# Todes, D. (2014). *Ivan Pavlov. A Russian Life in Science*. Oxford: Oxford University Press.

Tölle, R. (2008). Eugen Bleuler (1857-1939) und die deutsche Psychiatrie. *Nervenarzt* 79: 90–98. DOI 10.1007/s00115-007-2379-9

Weber, H. (2001). Der Monismus als Theorie einer einheitlichen Weltanschauung am Beispiel der Positionen von Ernst Haeckel und August Forel. In P. Ziche (Ed.), *Monismus um 1900. Wissenschaft und Weltanschauung*. Berlin: VWB—Verlag für Wissenschaft und Bildung, pp. 81-127.

Wiesendanger, M. (2006). Constantin von Monakow (1853–1930): A pioneer in interdisciplinary brain research and a humanist. *C. R. Biologies* 329: 406–418

Wilkins, A. (2013). Why did the modern synthesis give short shrift to “soft inheritance”? In S. Gissis and Jablonka, E. (Eds.), *Transformations of Lamarckism. From Subtle Fluids to Molecular Biology*. Cambridge: MIT Press, pp. 127-132.

Ziche, P. (2001). Die „Scham“ der Philosophen und der „Hochmut der Fachgelehrsamkeit.“ Zur fachphilosophischen Diskussion von Haeckels Monismus. In P. Ziche (Ed.), *Monismus um 1900. Wissenschaft und Weltanschauung*. Berlin: VWB—Verlag für Wissenschaft und Bildung, pp. 61-80.

1. I greatly appreciate the input to this project provided by Timothy Johnston, Sharon Salinger, John Brockway, Randolph Head, and my very patient Philly writing group. Please address correspondence to calogan@uncg.edu. [↑](#footnote-ref-1)
2. Forel, who directed the Burghölzli from 1879 to 1897, was a myrmecologist, neurologist, and psychiatrist. The first of his many insect studies appeared in 1869. He studied medicine in Munich, Zurich, and Vienna; and his research helped establish the neuron doctrine (Guillery, 2005; Spöring, 2014). [↑](#footnote-ref-2)
3. Forel preferred Semon’s language because it was suitable for both domains. After Forel summarized Semon’s theory in *Der Hypnotismus* (1907), the two men became friends. In a letter he sent to Forel on the day Semon shot himself, he wrote: “I owe you much, dear friend. . . . Adieu! . . . My heart remains full of esteem and gratitude to you” (“The death of Richard Semon.” *Journal of Heredity*, 1920: 11, p. 79, quoting Forel). [↑](#footnote-ref-3)
4. It is likely that Forel also influenced Bleuler’s attitude toward eugenics (Hell, 2000; Mottier, 2005; Dubach, 2007; Küchenhoff, 2008). In 1911, Bleuler wrote that, while sterilization was unprofitable, even damaging, for patients, it “hopefully . . . could soon be used in greater measure on grounds of race hygiene” (1950, p. 473). [↑](#footnote-ref-4)
5. Manfred Bleuler describes the kinds of disorders and the increased admissions across decades (see 1951, p. 387). He writes that the original transfer idea was “a gross error in planning” through which “[t]he entire history of the Burghölzli was clouded by congestion with chronic illness” (1951, p. 385). For a comparison of the two institutions, see Meier (2009). [↑](#footnote-ref-5)
6. Bleuler apologized for any incompleteness in his understanding of biological evidence. But starting with mind made the task no more difficult for him, he wrote, than it would be for biologists, who had not taken up the call. [↑](#footnote-ref-6)
7. Kammerer’s case was plagued by accusations of scientific fraud (Taschwer, 2016). But Bleuler rejected the accusations against him, even stating that he had been falsely accused (Bleuler, 1931, note 3, p. 4). [↑](#footnote-ref-7)
8. For clarity, Bleuler explained using cells; but he maintained that the logic applied to any cooperating subunit. [↑](#footnote-ref-8)
9. Bleuler coined “dereistische thinking” from the word “dereieren,” to de-reason, “that which deviates from reality.” I use “autism” or “autistic thinking” and “realistic thinking” throughout. [↑](#footnote-ref-9)
10. Bleuler believed that Freud’s pleasure principle neglected the impact of negative emotion: “If we interpret reality falsely . . . , we subject ourselves to constant unpleasantness. For all these reasons, [psychoses] in total must have a tendency to produce unpleasant impressions and moods” (Bleuler, 1906a/1907, pp. 339-340). [↑](#footnote-ref-10)
11. The article was based on a talk given in May, 1913. Küchenhoff (2006) presents Bleuler’s praise in his own words and suggests that he later became more receptive to Freud’s concepts. [↑](#footnote-ref-11)
12. See Bleuler, 1906a/1907, 1910/1911; Jung, 1906. [↑](#footnote-ref-12)
13. In later correspondence, Bleuler wrote that he felt “some melancholy” at Freud’s claim that Bleuler no longer accepted psychoanalysis. Having always expressed a preference for his approach, he saw their differences as “meaningless side issues” (EB to SF, February 18, 1925, Sigmund Freud Correspondence, US Library of Congress). In 1937, Bleuler joined the signatories supporting Freud’s nomination for the Nobel Prize (Hell, 2000; Dalzell, 2007). [↑](#footnote-ref-13)
14. Bernet (2013, Chapter 5) describes tensions that grew with Jung‘s emerging reputation, as his presence detracted from other research foci at the clinic. In 1909, he severed his connection with the Burghölzli and with institutional psychiatry. [↑](#footnote-ref-14)
15. Both men explained flexibility via the inheritance of acquired characteristics after the process had been rejected by many Western scientists, see Todes (2014, Chapter 32) on the negative reaction of US scientists during Pavlov’s 1923 American lecture tour. [↑](#footnote-ref-15)
16. Pavlov’s studies on experimental neurosis even extended his purposefulness to schizophrenia (see Todes, 2014, Chapter 45). [↑](#footnote-ref-16)
17. Tensions emerged between Meyer and Bleuler when, in the 1920s, Bleuler tried to secure a position for his son, Manfred, at the New York Psychiatric Institute and not at Phipps. Meyer wondered (to a colleague) why Manfred didn’t see that he must work to achieve such positions. But the two men remained cordial. Meyer later expressed regret that they had not reached greater “common ground.” Bleuler replied that good science often required differences of opinion (Alan Mason Chesney Archives, Johns Hopkins University, Adolf Meyer Papers, AM to EB, 12/4/30; EB to AM, 12/22/30). [↑](#footnote-ref-17)
18. Heidelberger (2003) describes several nineteenth century psychophysical parallelisms, including one equivalent to identity. He labels Wundt’s a “partial parallelism (p. 8).” Though his approach did not long dominate psychology (see Danziger, 1990), De Kock (2020, p. 389) writes that Wundt’s emphasis “remained the leitmotif of the German tradition of apperceptionism.” [↑](#footnote-ref-18)
19. Bleuler too had once employed apperception. He equated conscious perception with apperceiving and described “the failure of the apperception (1894, p. 145)” in a patient. [↑](#footnote-ref-19)
20. Bleuler also published critiques of two prominent Kraepelin students: Ernst Rüdin and Ernst Kretschmer(see Bleuler, 1917, 1920). [↑](#footnote-ref-20)
21. The quoted phrase likely refers to Wundt. [↑](#footnote-ref-21)
22. Kraepelin carried his focus on will so far as to treat even whispering or using foreign words as signs of a defective will (Decker, 2004). [↑](#footnote-ref-22)
23. Kraepelin’s views on method were first voiced in 1887 and often republished (see Engstrom, 2002, Chapter 5). [↑](#footnote-ref-23)