3 Madness in the Laboratory and the Rise of Numbers

In the previous chapter, I have outlined how the emergence of the great dichotomy in psychiatric classification was related to changes in institutional structures and hospital administration. I have also shed light on some of the historical antecedents that fed into the newly created medical concepts. I have shown that their wide acceptance was due to their utility in managing the mentally ill, as the great dichotomy was perfectly tailored to satisfy institutional and administrative needs. Yet another crucial factor for the concepts' popularity was related to the rhetoric of "scientific progress," which was associated with the use of diagnostic cards and reliance on instruments to obtain numerical data on symptoms. Kraepelin's dichotomy has often been portrayed as marking the beginnings of "modern psychiatry," and sometimes this assessment was accompanied by the view that this modern psychiatry was characterized by a distinctively "scientific approach." By introducing dementia praecox and manic-depressive insanity, Kraepelin is usually credited for having created the first "modern," i.e. "scientific" classification of mental disorders.[1]

For some medical historians, the unquestioned validity of these two concepts lies precisely in the novel and sophisticated methods that allegedly attested their existence. Even though Kraepelin was not the first to conceptualize the new disease forms, he is believed to have been the first to demonstrate their validity by the proper means. Before Kraepelin, the argument goes, "[no] one had ever approached the identification and classification of the insanities using a structured scientific method."[2] With assessments like this, Kraepelin's name and work is continuously instrumentalized to make claims about the state of present-day psychiatry.[3] Proponents of this narrative are less concerned with the understanding of past historical knowledge than with psychiatry's current future and its precarious standing among other medical disciplines.[4] Recourse to psychiatry's history is

1 Shorter, *What Psychiatry Left Out of the DSM-5*, 21; Andreas Ebert and Karl-Jürgen Bär, "Emil Kraepelin: A Pioneer of Scientific Understanding of Psychiatry and Psychopharmacology," *Indian Journal of Psychiatry* 52, no. 2 (2010): 191–192.

2 Noll, *American Madness*, 63.

3 Shorter, *What Psychiatry Left Out of the DSM-5*, 167.

4 In Noll's case, who has been quoted above, this fear of loss of credibility is expressed in a particularly clear way: "But if discrete conceptual boundaries between disorders can dissolve, so can the trust of the American public in psychiatry's claim to be a branch of medicine. [...] For more than a century dementia

Jaskov, Helena: Negotiating States of Mind: The Transformation of Psychiatric Knowledge in Imperial Germany and Meiji Japan, Heidelberg: Heidelberg University Publishing, 2025. https://doi.org/10.17885/heiup.1244

made to argue that one should stick to Kraepelin's dichotomy *in the here and now* because he used empirical and scientific methods *in the distant past*.[5]

The labeling of Kraepelin's methods as "scientific" is crucial to this line of argument. In many historical accounts, this label is used as some kind of pan-historical honorific, curiously untouched by the passage of time and independent from the intellectual context which brought about the practices receiving this badge of distinction. It allows speakers to gloss over changes in standards of validity and obscures any differences in past and present methods and in possibilities of "being scientific."[6] Current assumptions and trends serve as a yardstick to award this label to one historical figure but deny it to others, thereby primarily reconfirming personal tastes and contemporary beliefs while, at the same, time actively rewriting history.[7] Historians critical of this present-centered view have been skeptical whether "current psychiatry [truly] live[d] in a Kraepelinian world" and are more inclined to assume that it was, rather, the history of psychiatry that was recast in the colors of the present.[8]

In this chapter, I will critically reexamine the "structured scientific methods" that Kraepelin allegedly applied to obtain the new classification. Instead of focusing on the dubious significance of Kraepelin's diagnostic cards (mentioned in the previous chapter), I will re-examine the psychometric experiments that were conducted in the Heidelberg laboratory and were used to support the new classification system. By revisiting the methods and practices of the nineteenth-century laboratories of Imperial Germany, I do not intend to reassess whether they are truly entitled to be called "scientific" by twenty-first-

praecox and schizophrenia have been the principal concepts that have kept American psychiatry tethered to scientific medicine." (Noll, *American Madness*, 285–286).

5 The same ahistorical approach can be found in works that refer to Kraepelin's methods in order to argue for quite the opposite: that present-day disease concepts should be rejected because of the nineteenth-century methods that created them. See, for example, Boyle's appeal to abandon the concept of schizophrenia because it "has been developed [...] in a way which bears little resemblance to the methods of construct formation used in medical and other empirical sciences" (Mary Boyle, *Schizophrenia: A Scientific Delusion?* [London: Routledge, 1990], 193).

6 For an impression of the range of modes of "being scientific" in history, see Daston & Galison's discussion of different epistemic virtues that governed scientists' thoughts and actions through the ages (Lorraine Daston and Peter Galison, *Objectivity* [New York: Zone Books, 2010], 18).

7 See, for example, the invocations of Kraepelin's name in Roger K. Blashfield, *The Classification of Psychopathology: Neo-Kraepelinian and Quantitative Approaches* (New York: Plenum Press, 1984); Nancy Andreasen, "The Evolving Concept of Schizophrenia: From Kraepelin to the Present and Future," *Schizophrenia Research* 28, nos. 2–3 (1997): 105–9; Heinz Häfner, "Schizophrenia: Still Kraepelin's Dementia Praecox?," *Epidemiologia e Psichiatria Sociale* 13, no. 2 (2004): 99–112.

8 The above quote is from German E. Berrios and R. Hauser, "The Early Development of Kraepelin's Ideas on Classification: A Conceptual History," *Psychological Medicine* 18, no. 4 (1988): 813. A similar statement has been made by Jablensky in 1995 (A. Jablensky, "Kraepelin's Legacy: Paradigm or Pitfall for Modern Psychiatry?," *European Archives of Psychiatry and Clinical Neurosciences* 245, nos. 4–5 [1995]: 186). A critique of these uses of the past has been articulated in Eric Engstrom and Matthias Weber, "Making Kraepelin History: A Great Instauration?," *History of Psychiatry* 18, no. 3 (2007): 267–273.

century standards. Considering the rift that separates our world from theirs, I would be surprised if it turned out that scientific practices had *not* changed over the last hundred years. Awarding a badge of honor to those historical figures who happen to appear closest to our (rather discordant) present-day views does not seem to do justice to the plurality of pathways and directions available to nineteenth-century actors.[9] However, I intend to scrutinize the rhetorical use of the term "scientific" and disaggregate those practices that passed for nineteenth-century science in Kraepelin's time from those that did not. Moreover, instead of interpreting the introduction of "instrumental objectivity" into psychiatric practice as proof of the scientific maturity of psychiatry as a discipline, I will show that this type of "metric fixation" was closely linked to the rise of the "culture of management" in asylums and mental hospitals that has been examined in the previous chapter.[10]

In the late nineteenth century, psychiatry did, indeed, witness a turn towards empirical methods, but the meaning of this shift should not solely be sought in the professionalization of the discipline. It has been argued that the recourse to the supposed objectivity of numbers usually takes place from a weakened position.[11] Numbers can obscure complex judgments and contestable assumptions by rendering them invisible and thereby incontestable.[12] This strategy has been described as "black-boxing," used as a convenient device to establish trust and credibility.[13] In the previous chapter, I have already sketched the institutional setting in which Kraepelin's textbook was created and highlighted the insecure position of academic psychiatrists engaging in research in an atmosphere of rivalry and distrust. The recourse to earlier traditions and the illusion of continuity expressed in the textbooks can similarly be seen as a rhetorical strategy to establish credibility by referring to other authorities already invested with professional trust. In the following section, I will scrutinize the Heidelberg School's claims to objectivity in their attempt to harness the "numbers-producing techniques" of the emerging field of experimental psychology. By re-examining the circumstances and processes in which the numbers were originally

9 For those who are inclined to think that establishing a connection between past and present scientific knowledge is (or should be) the primary task in a history of science approach, please refer to Antonella Romano's short historiographical essay for an overview of the range of directions taken and the variety of research questions followed within the history of science since the 1990s (Antonella Romano, "Making the History of Early Modern Science: Reflections on a Discipline in the Age of Globalization," *Annales. Histoire, Sciences Sociales (English Ed.)* 70, no. 2 [2015]: 313–34).

10 On "instrumental objectivity" see Daston and Galison, *Objectivity*. On "metric fixation" and its link to "the culture of management" see Jerry Z. Muller, *The Tyranny of Metrics* (Princeton: Princeton University Press, 2018), 37.

11 Theodore M. Porter, *Trust in Numbers: The Pursuit of Objectivity in Science and Public Life* (Princeton: Princeton University Press, 1995), xi, 12.

12 Rose, "Governing Risky Individuals," 187.

13 Bruno Latour, *Science in Action: How to Follow Scientists and Engineers through Society* (Cambridge, Massachusetts: Harvard University Press, 1987), 131.

obtained, I will attempt to reopen the "black box" and shed light on the judgments and assumptions behind the metric operations.

Additionally, I will look into the ways and means that allowed the new approaches to take hold with the younger generation of psychiatrists and to become the norm on a global scale. I will show that some of the experimental techniques that will be discussed in this chapter were well suited to being performed in a classroom during patient demonstrations and that teaching the new observation practices together with the new medical concepts ensured the consolidation of the doctrines of the Heidelberg School and allowed for the transmission of its knowledge to the next generation of psychiatrists. In a parallel development, the knowledge transmission also worked on a geographical level, and Kure Shūzō proved essential in transposing the new practices to Japan, where he taught his own students in much the same way as the Heidelberg psychiatrists did. I will investigate how psychophysical research, textbook production, concept formation, and university teaching were intertwined and how all of these activities equally related to observing, testing, documenting, and presenting the patients of the clinic. Lastly, in investigating the relationship between research and presentation, I will examine the structure and language of patient demonstrations in Heidelberg and Tokyo, point out the strategies of guided observation, and highlight the performative character of this teaching format.

3.1 Research in the Laboratory

In the nineteenth century, mental illness was not only put under observation in the wards of asylums, in lecture theaters, on battlefields, in army barracks or military hospitals. Alienists, whose training often comprised a profound knowledge of the fields of pathology and neurology, sought to deepen their understanding of mental illness by extending their knowledge-seeking activities to the laboratory. They meticulously examined tissue, blood, and urine samples of hospitalized lunatics under the microscope and with the aid of an assortment of special chemicals. They regularly dissected the brains of their deceased patients, looking for traces of a diseased mind in the folds and layers of their organic matter. Such efforts were invigorated by the discovery of the cause of general paresis in the 1880s and instilled hope that the laboratory would yield more insights into the origins and workings of other mental disorders. However, when it became apparent that more spectacular findings of this kind were slow in coming, some psychiatrists ventured to explore other laboratory methods and turned their attention to experimental psychology, sometimes also referred to as experimental physiology.[14]

14 Especially in the French-speaking context, it was more common to speak of "experimental physiology." For a short overview, see Jacqueline Carroy and Régine Plas, "The Origins of French Experimental Psychology: Experiment and Experimentalism," *History of the Human Sciences* 9, no. 1 (1996): 73–84. For the American case, see James H. Capshew, "Psychologists on Site: A Reconnaissance of the History of the Laboratory," *American Psychologist* 47 (1992): 132–142. For a contemporary description of existing

It is in this kind of laboratory that melancholia and other supposedly obsolete medical concepts were disassembled into "elementary mental processes" and ultimately lost their form as coherent mental diseases. The configuration of the experimental psychologist's laboratory, together with its instruments and research practices, had its origins in rather diverse experimental settings, all with their different objectives and theoretical assumptions. When Kraepelin harnessed the practices of experimental psychology for the psychiatric clinic, he mainly referred to the work of Wilhelm Wundt, whose famous laboratory in Leipzig inspired many experimentally minded scientists, physicians, and philosophers. Even though Wundt was not the inventor of the reaction time experiment, nor the first to engage in mental chronometry, he popularized these practices and contributed to the institutionalization of psychology as a distinct field of research. Kraepelin, who was a former student of Wundt's, was very enthusiastic about the emerging new discipline of experimental psychology at an earlier stage in his career.[15] His other acclaimed predecessors were the physician Ernst Heinrich Weber (1795–1878), who had conducted empirical studies on the human perception of weight and sound, and the physicist Gustav Theodor Fechner (1801–1887), who turned these observations into mathematical form and thus made them calculable.[16] While these earlier experimenters were primarily interested in the study of "normal mental phenomena," Kraepelin attempted to apply their insights to the field of psychopathology. In this, he not only followed Wundt's categories to describe the elements of mental activity (reflex, impulse, perception, apperception, cognition, association, judgment) but also his instructions on how to obtain reaction times for separate kinds of mental activity by using the subtractive procedure.[17]

German laboratories, see Victor Henri, "Les laboratoires de psychologie expérimentale en Allemagne," *Revue philosophique* 36 (1893): 608–622.

15 On the connection between Wundt and Kraepelin see Hildebrandt, "Der psychologische Versuch in der Psychiatrie"; Hoff, *Emil Kraepelin und die Psychiatrie als klinische Wissenschaft*; A. H. A. C. van Bakel, "Über die Dauer einfacher psychischer Vorgänge: Emil Kraepelins Versuch einer Anwendung der Psychophysik im Bereich der Psychiatrie" [On the Duration of Simple Mental Acts: Emil Kraepelin's Attempt to Make Use of Psychophysics in the Field of Psychiatry], in *Objekte, Differenzen und Konjunkturen: Experimentalsysteme im historischen Kontext*, ed. Michael Hagner, Hans-Jörg Rheinberger, and Wahrig-Schmidt Bettina (Berlin: Akademie Verlag, 1994), 83–105; Roelcke, "Laborwissenschaft und Psychiatrie"; Eric Engstrom, "La *messende Individualpsychologie*: Sur le rôle de l'expérimentation psychologique dans la psychiatrie d'Emil Kraepelin," *Psychiatrie - Sciences Humaines - Neurosciences* 1, no. 2 (2003): 40–46; Eric Engstrom [Engstrom, Eric J.], "On Attitudes toward Philosophy and Psychology in German psychiatry, 1867–1917," in *Philosophical Issues in Psychiatry III: The Nature and Sources of Historical Change*, ed. Kenneth S. Kendler and Josef Parnas, International Perspectives in Philosophy and Psychiatry (Oxford: Oxford University Press, 2015), 147–164.

16 Emil Kraepelin, "Der pychologische Versuch in der Psychiatrie" [The Psychological Experiment in Psychiatry], in *Psychologische Arbeiten*, ed. Emil Kraepelin, vol. 1 (Leipzig: Verlag von Wilhelm Engelmann, 1896), 1. On the history of mental chronometry, see especially Henning Schmidgen, *Hirn und Zeit: Die Geschichte eines Experiments 1800–1950* [The Brain and Time: The History of an Experiment 1800–1950] (Berlin: Matthes & Seitz, 2014).

17 There is an enormous number of studies on Wundt, as he is considered by many historians as the fa-

In Wundt's system, higher mental elaboration was understood as being compounded of the above-mentioned basic elements of mental activity.[18] Because the individual elements were perceived as operating independently of each other, they could be studied in isolation, and the mental part-time for each one of them was believed to be fixed. Even though this method did not provide reliable numbers and reproducible results, Wundt's elementism still governed the experimental setting both in the Leipzig and the Heidelberg laboratories.[19] Once the analyzing potential inherent in the elements of mental activity was transferred to the psychiatric clinic, the disease concepts began to change their shape in the process. Remnants of older conceptualizations, such as the divisions assumed in faculty psychology, gave way to new ways of compartmentalizing mental functioning and of reconceptualizing the boundaries of diseases.

The kinds of experiments conducted in Wundt's laboratory in Leipzig were designed to investigate the mental laws that governed human perception, thought, and action. In the field of perception and sensation, most experiments were related to vision. Examples include studies on the psychophysics of light and the excitation of the retina, on the psychophysics of color, on peripheral vision, on visual contrast, and on colorblindness. These were complemented by a few experiments dealing with auditory sensation, touch, and taste. Still other studies tackled the fields of attention, feeling, and association. Nonetheless, it was the "reaction experiments" and the studies on "mental chronometry" that received most acclaim and contributed to the fame of the Leipzig laboratory. These experiments included investigations into the times of different mental processes, the differentiation between sensorial reaction and muscular reaction, and the calculated time for the process of apperception.[20]

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ther of modern psychology. A classical study is Edwin G. Boring, *A History of Experimental Psychology* (New York: Appleton-Century-Crofts, 1950). Wundt was attempting to establish the new discipline of psychology within the field of philosophy thus making psychology an auxiliary discipline for the study of human thought and reasoning (Ash, "Academic Politics in the History of Science"; Mitchell Ash, "Psychologie in Deutschland um 1900: Reflexiver Diskurs des Bildungsbürgertums, Teilgebiet der Philosophie, akademische Disziplin" [Psychology in Germany around 1900: Reflexive Discourse of the Educated Middle-Class, Branch of Philosophy, Academic Discipline], in *Konkurrenten in der Fakultät: Kultur, Wissen und Universität um 1900*, ed. Christoph König and Eberhard Lämmert [Frankfurt am Main: Fischer-Taschenbuch-Verlag, 1999], 79–93). For more recent studies on Wundt see Mitchell Ash, "The Uses and Usefulness of Psychology," *Annals of the American Academy of Political and Social Science* 600 (2005): 99–114; Claudia Wassermann, "Physiological Optics, Cognition and Emotion: A Novel Look at the Early Work of Wilhelm Wundt," *Journal of the History of Medicine and Allied Sciences* 64, no. 2 (2009): 213–249; Schmidgen, *Hirn und Zeit*.

18 On the other hand, Wundt was skeptical whether the experimental method could be usefully applied to study higher mental functioning such as thought, volition, and emotion (Kurt Danziger, *Constructing the Subject: Historical Origins of Psychological Research* [Cambridge: Cambridge University Press, 1990], 36–37).

19 On the problems of applying the subtractive procedure in practice and on the critique of Wundt's elementism, see Boring, *A History of Experimental Psychology*, 149.

20 Boring, 340–342.

However, not all of these research agendas and experiments were appealing to psychiatrists. For their practical purposes, the Heidelberg experimenters mainly adapted the Wundtian reaction-time experiments in order to investigate the pathological phenomena of the disturbance of apprehension (*Störung der Auffassung*) and the disturbance of the release of the volitional impulse (*Störung der Auslösung des Willens*).[21] Based on his earlier experiments with toxins, Kraepelin claimed that a combination of disturbances in these two fields could account for most of the pathological states that could be observed in mental illness. In fact, he assumed that intoxication was nothing but an artificially produced state of mental illness and that one could understand insanity through the study of the effects of poisons.[22] According to Kraepelin, intoxication with alcohol, for example, was characterized by impeded apprehension coupled with a simultaneous facilitation of the release of the volitional impulse.[23] Suitable experimental approaches to investigate these mental states were tests designed to obtain the time for word-reactions (repeating a trigger word) and choice-reactions (pushing one of two buttons after hearing a trigger word).[24]

The experimental psychology enthusiasts of the Heidelberg laboratory did not merely adopt the methods from Leipzig and other influential sites of experimentation such as Berlin (1886), Göttingen (1887), Giessen (1896), and Würzburg (1896).[25] Rather, they created their own experimental setups suited to the clinic, commissioned new instruments and apparatuses, and aimed to shape and promote the field of experimental psychopathology by publishing their own research results in a special series. The first issue of *Psychologische Arbeiten*, which featured a programmatic introduction and detailed descriptions of the experiments, appeared in 1896 and coincided with the fifth edition of Kraepelin's textbook on psychiatry, where the category of dementia praecox had already taken shape.[26] In the following section, I will point out the interrelations between the textbooks and the experiments and show how concept formation was linked to laboratory practice. I will

21 Kraepelin, "Der pychologische Versuch in der Psychiatrie," 9–10.

22 Kraepelin, "Über die Einwirkung einiger medicamentöser Stoffe auf die Dauer einfacher psychischer Vorgänge." On artificial madness, see also E. Engstrom, "Tempering Madness," 169–170.

23 Kraepelin, "Der pychologische Versuch in der Psychiatrie," 81–83.

24 Kraepelin, 9–10.

25 The numbers in brackets refer to the founding year of the respective laboratory. On the development of laboratories of experimental psychology in Imperial Germany see Ash, "Academic Politics in the History of Science." For practicing psychiatrists, the laboratory of the psychiatric clinic in Giessen directed by Robert Sommer was an important site of experimentation, although it is rarely mentioned in historical accounts on the development of experimental psychology (most notably it is absent from Boring's *History*). However, it was in Giessen that the German Society for Experimental Psychology was founded in 1904, and Sommer's *Textbook on Examination Methods in Psychopathology* was a source of inspiration for experimentally-minded psychiatrists (Sommer, *Lehrbuch der psychopathologischen Untersuchungsmethoden*).

26 Emil Kraepelin, ed., *Psychologische Arbeiten* [Works in Psychology], vol. 1 (Leipzig: Verlag von Wilhelm Engelmann, 1896).

begin with a particular experiment that was conducted with the help of a device specifically designed for the Heidelberg laboratory.

The Writing-Pressure Scale

The writing-pressure scale experiment appears both in the sixth edition of Kraepelin's textbook and the second issue of *Psychologische Arbeiten*, both published in 1899. Both texts argue that the measurements and graphs obtained in the experiment provide evidence for certain characteristics of the disease concepts that are under examination. Whereas the detailed experiment report documented by Adolf Gross (born 1868) provides most of the numbers and patient data that had been collected, the textbook merely quotes a few lines from that report and presents some selective data as generalized truths about the nature of manic-depressive insanity.[27] Both texts present an incomplete account of the numbers-producing technique, but the black-boxing effect is much more pronounced in the textbook because it completely decontextualizes the numbers and elides the scope of the experiment, making it impossible to judge whether the generalizations are justified.[28]

Following the new hierarchy of significant clinical signs allegedly obtained through statistical record keeping and longitudinal observation, Kraepelin's textbook presents the disease categories dementia praecox and manic-depressive insanity in a descriptive style that coincides with the new system. To supplement these categorizations, the textbook refers to various experiments conducted at the Heidelberg laboratory and thereby offers evidence in the form of charts and figures that are supposed to attest to the empirical, "scientific methods" that were employed to obtain objective observations. Figure 3.1 shows one example of such a chart used for argumentative purposes in the textbook of 1899.[29] It supposedly exemplifies characteristics of the symptoms of inhibition and motor excitability obtained through Gross's experiments with the writing-pressure scale. In the textbook, this figure is mainly employed to support Kraepelin's argument that mania and melancholia are in fact manifestations of one single disease (instead of two), namely, the newly coined manic-depressive insanity category, because patients from this group exhib-

27 Adolf Gross, "Untersuchungen über die Schrift Gesunder und Geisteskranker" [Examination of the Writing of the Healthy and the Insane], in *Psychologische Arbeiten*, ed. Emil Kraepelin, vol. 2 (Leipzig: Verlag von Wilhelm Engelmann, 1899), 450–567.

28 The graph of the writing-pressure scale experiment in Kraepelin's textbook has been mentioned in Monika Ankele, "Ausdrucksbewegungen im Fokus des psychiatrischen Blicks um 1900" [Gestures as Focal Point of the Psychiatric Gaze around 1900], in *Wissen und Nicht-Wissen in der Klinik*, ed. Martina Wernli (Bielefeld: Transcript, 2012), 87–114. However, the author does not refer to Gross's original article and denies any connection between experimentation and Kraepelin's classification, mainly relying on the general assessment made in Hoff, *Emil Kraepelin und die Psychiatrie als klinische Wissenschaft*.

29 Kraepelin, *Klinische Psychiatrie*, 373.

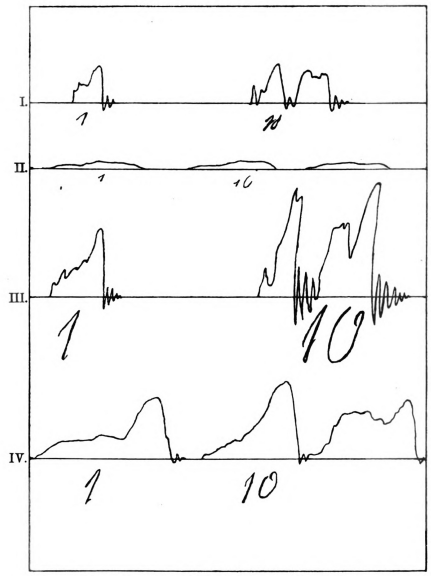

Figure 3.1: Writing-pressure curves in Kraepelin's textbook, 1899

ited the same kind of disturbance in the symptoms of inhibition and motor excitation. However, this presentation is skewed at best, as I will show in the following.

The reference to the psychometric experiment illustrates Kraepelin's mechanistic understanding of the concepts of "inhibition" and "excitation" as well as their relevance for the medical category of manic-depressive insanity. The four graphs (I–IV) in Figure 3.1 represent four different tests in which a person was asked to write the figures "1" and "10" using a writing-pressure scale (for a depiction of such an apparatus, see Figure 3.2). The scale registers changes in the pressure and speed of the subject's writing. The recording is achieved through the use of a kymograph drum that is connected to the device.[30] When the writing is slow, the graph takes up more space on the horizontal axis, as can be seen in examples II and IV. Conversely, when the pressure is high, the graph extends in the vertical direction, as in III and IV.

30 The graphic representation of organic and motor functions in the form of curves was a characteristic feature of the early phase of experimental physiology (Schmidgen, *Hirn und Zeit*, 244). On the history of the kymograph and graphic registration, see Hebbel E. Hoff and Leslie Alexander Geddes, "Graphic Registration before Ludwig: The Antecedents of the Kymograph," *Isis* 50 (1959): 5–21; Soraya de Chadarevian, "Die 'Methode der Kurven' in der Physiologie zwischen 1850 und 1900" [The "Method of Curves" in the Field of Physiology between 1850 and 1900], in *Die Experimentalisierung des Lebens: Experimentalsysteme in den biologischen Wissenschaften 1850/1950*, ed. Hans-Jörg Rheinberger and Michael Hagner (Berlin: Akademie Verlag, 1993), 28–49.

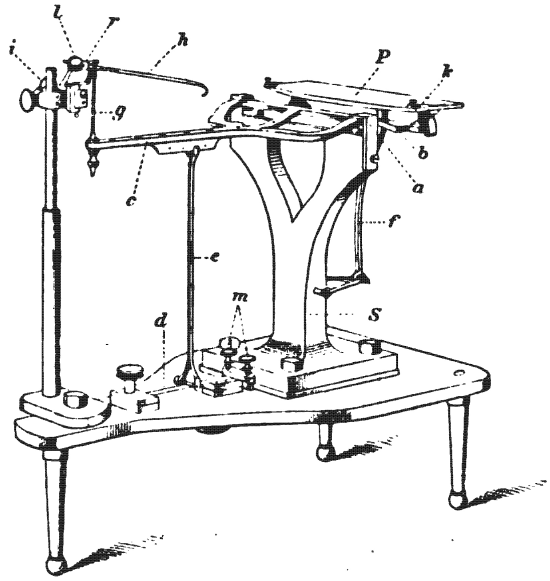

Figure 3.2: Diagram of writing-pressure scale

According to Kraepelin's account, graph I was produced by a healthy hospital nurse, graph II by a female patient in the depressed state, and graph III by another female patient in the manic state.[31] When compared to the allegedly "normal" writing characteristics of the healthy nurse in graph I, the writing of the depressed patient shows "inhibition" in the form of lower pressure and lower speed. Conversely, the writing of the manic patient shows "excitation" in the form of higher pressure and higher speed. The fourth graph was produced by the same patient as in example III, but at the time of the experiment, the symptoms of mania were already receding. For Kraepelin, this meant that the patient exhibited a mixture of both "inhibition" and "excitation" simultaneously, because while the writing was slower than "normal" it was at the same time executed with higher pressure than "normal."[32] In this line of argument, the "mixture" of "inhibition" and "excitation" was considered to be a clear illustration of the fact that the seemingly opposed clinical symptoms of mania and melancholia were closely related phenomena. In extension, it was taken to indicate that both were expressions of the same underlying disorder (*nahe verwandte Erscheinungsformen einer gemeinsamen Grundstörung.*)[33]

31 Kraepelin, *Klinische Psychiatrie*, 371–372.

32 For a historical discussion of the concept of the "norm," see Jürgen Link, *Versuch über den Normalismus: Wie Normalität produziert wird* [Essay on Normalism: How Normalcy Is Produced] (Göttingen: Vandenhoeck & Ruprecht, 2013).

33 Kraepelin, *Klinische Psychiatrie*, 372.

However, this mode of argumentation is both reductionist and expansionist at the same time. It is reductionist in the sense that it severely limits the necessary range of observable proof required to draw conclusions about a subject's mental state, and it is expansionist in the sense that it overstates the significance of the limited data that the writing-pressure scale experiment allows one to gather. Indeed, it not only suggests that a conceptually central function of the mind, the so-called "volitional impulse" (Willensantrieb), is directly observable through peripheral outside phenomena, but it also equates "reduced writing speed" and "reduced writing pressure" with "inhibition," i.e. a dysfunction of a patient's volitional impulse. This double move allowed the Heidelberg experimental psychologists to draw conclusions about complex psychological phenomena such as volition and drive through an experimental device that was designed to document writing speed and writing pressure, nothing more.

This inference from the physical to the psychological was only possible because of preconceived assumptions about what disturbed motor functions can stand for in the mental sphere. Specifically, it was Wundt's notion of "psychophysical parallelism" that enabled these kinds of assumptions: through a handy inner–outer synchronicity, the whole nature of a state of depression, including a person's feelings, inner life, self-perception, and attitude towards the outside world could be reduced to a "simple" physical slowing of movement. In Kraepelin's new conception of the disease, "motor retardation" had essentially become the core defining symptom. The same mechanistic approach can be observed in the report by Gross, who employed the metaphor of a "broken clock" in order to describe the nature of manic-depressive illness. According to him, the symptom of inhibition could be compared to the defective mechanism of a clock whose "normal" working was continuously hampered by the friction of a chafing spring.[34]

By comparing Kraepelin's textbook description with Gross's report, some of the generalized statements can be further contextualized. While the textbook presents the measured insights as universal truths, the original graphs were in fact based on a small series of experiments involving seventeen healthy nurses, three depressed patients, and four manic patients from the Heidelberg clinic conducted in March and April 1897.[35] By cross-referencing patient data in Kraepelin's textbook and Gross's article, the graphs reproduced in the textbook can be correlated with experiments involving Gross's patient no. 3 (graph II in Figure 3.1) and patient no. 4 (graphs III and IV in Figure 3.1). From Gross's report, we learn that the range for "normal writing" (*Gesundheitsbreite*) was established by

34 Gross, "Untersuchungen über die Schrift Gesunder und Geisteskranker," 566. Gross contrasted this image of a constant mechanical inhibition in manic-depressive patients with the complete "loss of harmony and rhythm" in dementia praecox patients. Building on his "broken clock metaphor," he suggested that catatonic patients were like clocks that were put out of order through a foreign body inside the clock, sometimes blocking the mechanism completely, sometimes allowing it to run on only to block it again in an unpredictable manner.

35 Gross, 458, 486, 500.

the observation of seventeen clinic attendants and that Gross considered the number of "normal tests" to be high.[36] According to him, the intelligence of the healthy test persons was more or less comparable to that of the patients because both groups predominantly belonged to the class of workers and peasants.[37] We also learn that the original experiment was composed of five different tasks: drawing four lines, making five dots, writing the small letter "m," writing the numbers 1–10, and writing the seven numbers that are obtained by repeatedly subtracting 3 from 20 (20, 17, 14, 11, 8, 5, 2).[38] The healthy test persons performed these tests only once, but the patients were sometimes asked to repeat the test several times. These numbers provide a first insight into the construction of the normal and the pathological that form the basis of the depiction in Figure 3.1. Some other details reveal more about Gross's reasoning and judgment and also show the selective nature of Kraepelin's use of the graphs.

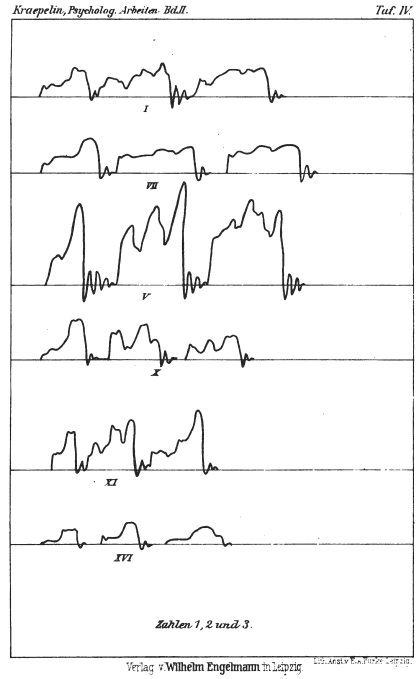

Figure 3.3: Curves produced by healthy staff in Gross's study, 1899

All of the female staff members in Gross's experiment (nine nurses) had small, accurate, and tidy handwriting. Gross observed that some of them were timid and shy during the

36 Gross, "Untersuchungen über die Schrift Gesunder und Geisteskranker," 458.
37 Gross, 458.
38 Gross, 456–457.

test and were afraid of embarrassing themselves in front of the doctor and of making mistakes in the subtraction exercise.[39] Although this group of women wrote their numbers with less speed and pressure than the male staff, even here some variation in the writing style is discernible in the corresponding graph in Figure 3.3.[40] The same can be said for the female manic patients participating in the writing scale experiment. While patient no. 4 (Mrs. M. L., a 53-year-old lady) writes in big characters and with much pressure and speed, the graphs of patients no. 5 (Ms S. R., 46 years) and no. 6 (Mrs. K. S., 54 years) are much more flat (see Figure 3.4).[41] From the wider range of writing samples contained in Gross's article, one can conclude that Kraepelin's choice was deliberately made to enforce his argument about manic exaltation and melancholic inhibition because in direct comparison, it becomes clear that he chose the most extreme example from among Gross's manic patients to enhance the visual effect of contrast.

Apart from the effect of selection, some more problematic aspects concerning the interpretation of the numbers and curves ought to be mentioned. As was not unusual at the time, Gross and Kraepelin show hardly any concern for the immediate context of the experiments, and the tests are presented as taking place in a discrete space, free from any internal or external influences that might distort the results. It was only later generations of experimenters who started to record factors such as attitude, medication, and mood, which are by now commonly perceived as exerting an influence on people's writing.[42] Furthermore, if they ever considered extraneous factors at all, this was more likely to happen in the case of healthy test subjects who showed irregular test results, whereas the irregularities shown by mental patients were usually seen as direct reflections of insane minds.

On a more individualized level, Gross and Kraepelin seem to pay little heed to their patients' professional background and the wider context of the phenomena that they record as well. For instance, whereas both of them agree that the female patient No. 4 has "patho-

39 Gross, 458.

40 The graph represents the curves resulting from writing the numbers 1, 2, and 3. The first three lines show the writing of men and the last three the writing of women.

41 The upper two lines are filled with graphs from patient no. 4 (4 lines followed by the numbers 1, 2, 9, and 10). The third line as well as the left side of the fourth line belongs to patient no. 5 (one line followed by the numbers 1, 2, 9, and 10, followed by the letter "m"). The remaining graphs represent patient no. 6's writing (the same numbers as above). There is a typo on the plate, but the attribution made in Gross's text is unambiguous. Gross mentions in the patient history of patient no. 4 that she was usually treated with continuous bath treatment during the day while she spent the nights in an isolation cell (Gross, 500).

42 Helmut Enke, *Der Verlauf in der Klinischen Psychotherapie: Probleme und Möglichkeiten einer objektivierenden Psychodiagnostik des Behandlungsverlaufs bei stationär psychotherapeutisch behandelten Patienten mit Organfunktionsstörungen und psychosomatischen Erkrankungen* [Progression in Clinical Psychotherapy: Problems and Possibilities of an Objectifying Psychodiagnosis of the Course of Treatment for Patients Who Are in Stationary Psychotherapeutic Treatment with Organ Malfunction and Psychosomatic Affections] (Berlin: Springer, 1965), 34–35.

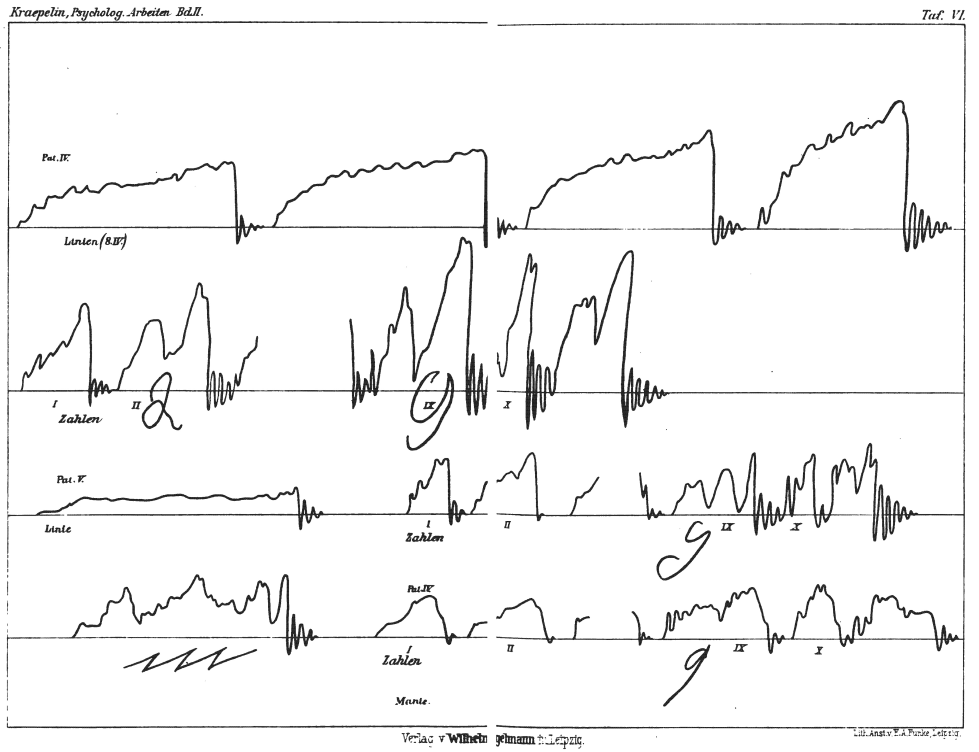

Figure 3.4: Curves produced by manic patients nos. 4, 5, and 6 in Gross's study, 1899

logically big handwriting" for a woman, they provide no evidence that she ever wrote in the same small and delicate record-keeping characters that the Heidelberg nurses used.[43] Since they did not bother to record her profession but Gross did note that most patients were from the working class, it is possible that she was working in a physically demanding profession or had otherwise no interest in neat scripture, and their failure to take any of this into account in their judgment reveals a blind spot in their perception of the plurality of contemporaneous female life styles more than it does anything else.[44]

The Counting Test

Psychometric experiments, which Kraepelin emphatically recommended alongside the well-established laboratory practice of cerebral pathology, could provide empirical, objectively obtained evidence where the microscope still failed to yield results.[45] References to all sorts of experiments conducted by Kraepelin and his Heidelberg team can be found throughout the textbook. The section on patient examination, for example, contains the description of a method to establish disturbances in the field of attention. By letting the patient repeatedly subtract 7 from 100 while recording speed and potential irregularities, one could gain a measurable result of the patient's attention capacity and distractibility.[46] Exactly the same method was used by Kraepelin's student Adolf Gross to examine disturbances of attention in ten patients exhibiting various kinds of stupor (a state of mental and physical inertness).[47] The subtraction exercise and similar experiments (like counting from 1 to 20) were mostly conducted between the spring and fall 1896 and were intended to prove that the unresponsive, stuporous state in catatonic patients (*katatonischer Stupor*) was different in kind from the stupor exhibited by manic-depressive patients (*circulärer Stupor*).[48] Unsurprisingly, Gross's experiment served to buttress Kraepelin's dichotomous distinction between dementia praecox and manic-depressive insanity.

Without any context, Gross's argument may sound convincing, but when his experiment description is more closely examined, it shows some noteworthy particularities: the experiment encompassed tests with three manic-depressive patients, two cases of general paresis, and five catatonic patients. The main argument relied on attesting the existence of "motor inhibition" or the lack thereof. The time measurements were performed with a stopwatch that allowed time to be read to the fifth of a second. According to Gross's

43 Gross, "Untersuchungen über die Schrift Gesunder und Geisteskranker," 509; Kraepelin, *Klinische Psychiatrie*, 374.

44 Gross, "Untersuchungen über die Schrift Gesunder und Geisteskranker," 458.

45 Kraepelin, "Ziele und Wege der klinischen Psychiatrie," 844. It has also been noted that Kraepelin was physically not fit to pursue laboratory work in cerebral pathology because of his poor eyesight (Scull, *Madness in Civilization*, 263).

46 Kraepelin, *Allgemeine Psychiatrie*, 276.

47 Adolf Gross, "Ueber Stupor" [On Stupor], *Allgemeine Zeitschrift für Psychiatrie* 53, no. 5 (1897): 857.

48 Gross, 856, 859.

observations, all manic-depressive patients showed "motor inhibition," which in practice meant nothing more than that all three of his patients (*Patients I–III*) required more than approximately three to five seconds to speak out the numbers 1 to 20.[49] While detailed test results were given for the manic-depressive and general paresis patients, no numbers were offered to document the catatonic patients' lack of "motor inhibition."[50] Instead, Gros noted that a systematic examination was impossible because of the catatonic patients' lack of cooperation.[51] Lack of cooperation, or "negativism," as Gross referred to the phenomenon, was considered to be one of the main characteristics of the dementia praecox disease as it had been conceptualized by Kraepelin and his followers. Because of the catatonic patients' "negativism," their "motiveless resistance" to treatment and experimentation, Gross could only offer his personal impression that none of the catatonics *seemed* to show "motor inhibition." Having experimentally provoked undetermined "defense reactions," he was able to observe that the patients' movements were in most cases rapidly performed.[52] This clearly shows that Gross's reasoning was only partly dependent on measurements and numbers and that he was willing to fill in the blanks with more basic observational data, although this contradicted the claim to numerical objectivity. Specifically, although he had obtained exact numbers for one half of his patients, he had had to rely on his subjective perception of movement speed for the other half.

Moreover, in this experimental setup, counting from 1 to 20 and performing a defensive movement were treated as one and the same type of activity, for which one and the same level of speed was assumed to be appropriate. These circumstances put the experiments in a different light and show a less straightforward relationship between scientific obser-

49 Elsewhere, Gross indicated that he considered three to five seconds to be a normal value for counting from 1 to 20 as fast as possible (Adolf Gross, "Zur Psychologie der traumatischen Psychose" [On the Psychology of Traumatic Psychosis], in Kraepelin, *Psychologische Arbeiten*, 2:583). Normal values were usually obtained from hospital staff of the Heidelberg clinic. If you try this at home with a timer, you will notice that scoring less than four seconds is actually not that easy without blurring the words.

50 Patient I scored 60/5 sec. on 28 April 1896, 110/5 sec. on 23 July 1896, 77/5 sec. on 14 August 1896, 63/5 sec. on 2 September 1896, and 50/5 on 11 September 1896. The performance of patient II was recorded with the extreme value of 1117/5 sec. on 4 May 1896, 164/5 sec. on 14 May 1896, and 20/5 sec on 1 August 1896. The numbers for the last test were considered normal and the patient considered healthy at the time. Patient III showed 56/5 sec. (no dates provided) (Gross, "Ueber Stupor," 858).

51 Gross, 859. Gross used the same rhetoric to describe the resistance of the catatonic patients who participated in the writing-pressure scale experiment (Gross, "Untersuchungen über die Schrift Gesunder und Geisteskranker," 535). He complained that it was difficult to make the patients do what was asked of them (Gross speaks of "commands" (*Befehle*), rarely about "requests" (*Aufforderungen*)). Some patients deliberately ignored the instructions by writing an upper case "M" instead of a lower case "m" or instead of dots, also dashes instead of dots, or by writing their name and address instead of the sequence of numbers, see (Gross, 551).

52 Unfortunately, we do not learn what kind of defense reactions Gross provoked by what means. In his textbook Kraepelin mentions testing patients for "negativism" by causing a painful sensation, making some threatening movements, like holding a needle close to the patient's eye, or forcing them to change their position in bed (Kraepelin, *Klinische Psychiatrie*, 208).

vation and nosological argumentation. Although Gross's experiments did involve measurements of psychophysical phenomena and the production of numbers, his argument about difference in "motor inhibition" did not rely on a comparison of differing numerical values. Furthermore, by decontextualizing the setting in which the movement speed was measured or estimated, Gross was able to subsume very different types of movement under the label of motility. Only in very abstract terms can it be assumed that counting numbers and defending oneself involves a kind of body movement that can be measured with a stopwatch. However, this abstract comparison also assumes that the notion of threat (or motivation, or any other kind of context) does not influence a person's movement speed. By analogy, his reasoning seems to suggest that running around in one's apartment and running away from a lion would objectively be performed with comparable speed and enthusiasm.

The Word Association Test

Another test that the Heidelberg experimental psychologists carried out was the word association test. Like the previous test schemes, it pretended to rely on a rigid system of statistical analysis, but its conceptual flaws may lie even closer to its analytical core. The general argument that Gustav Aschaffenburg (1866–1944) tries to make with the case of his male subject no. 4, for instance, is that there is a strong correlation between the manner in which the latter forms associations and his mental state. Aschaffenburg notes that the number of "sound associations" is far greater during the patient's manic state than during the depressed state.[53] Furthermore, he attests that there is an increase in "internal associations" and a decline of "external associations" when the manic state recedes. The experimental setting in which these statistics are produced is relatively simple. The patient is prompted to give a verbal reaction to a trigger word pronounced by Aschaffenburg, and the test setup posits that he replies with whatever first comes to mind. Aschaffenburg notes down the result and subsequently evaluates the answers given by the patient. Every test series contains 100 words (usually nouns), and sometimes the reaction time is also recorded, though not in this subject's case.

The evaluation of the patient's responses to the trigger words is the crucial part of the experiment. When Aschaffenburg conducted his experiments, there were many theories around about how to interpret the answers and how to categorize them. However, among all of those engaging in experimental psychology there was a general agreement that the word association tests provided insights into the workings of the mind and the

53 Thirty in December 1894; seventeen in January 1895; fifteen in July 1895; 10 in August 1895; four in October 1895; one in November 1895; none in the next three tests (April–July 1896) (Gustav Aschaffenburg, "Experimentelle Studien über Associationen. III. Theil: Die Ideenflucht" [Experimental Studies on Associations. Part III: The Flight of Ideas], in *Psychologische Arbeiten*, ed. Emil Kraepelin, vol. 4 [Leipzig: Verlag von Wilhelm Engelmann, 1904], 322).

particularities of the thought process. Two different types of associations were usually distinguished, which were attributed to different mental operations. Either the connection from trigger word to response word was based on a similarity that was grounded in the meaning of the two words, or it was based on some form of co-occurrence (in time, space, or language). A meaning-based association was considered to represent a higher mental elaboration than an association based on external criteria. According to Aschaffenburg, the lowest kind of associations was those that were formed based on the sound of the word (like bite–site; house–mouse) without being (internally) connected by meaning. After having conducted experiments on himself, his Heidelberg colleagues, and some visiting scholars (altogether seventeen medical men) between 1892 and 1895, Aschaffenburg concluded that a healthy individual would rarely produce more than four sound-associations in a test series of 100 words.[54] Unfortunately, Aschaffenburg did not provide a list of the response words and trigger words obtained in the experiment, so there is no way to critically reassess his judgment, and the black box of the number-producing operation has to remain closed. However, Aschaffenburg gives several examples in the introduction to his 1896 article which offer insights into his categorization approach and allow us to infer the general reasoning behind his judgment.

As examples of internal associations, he lists the following word pairs: confinement–jail, tea–coffee, advantage–disadvantage, attack–defense; after which he adds that "the subjective perception of the test person [in this case, the physician] is crucial in classifying the association."[55] Although it is easy to recognize the meaningful connection between these word pairs, it is harder to comprehend why the pair tea–coffee should not be considered a customary linguistic co-occurrence, as in the question "tea or coffee?," or why the pair advantage–disadvantage (*Vor-teil* and *Nach-teil* in German) should be more than a play on words. Examples of external associations are represented by mouth–nose; plant–pot; Luzern–Rigi; teacher–school; etc. In these cases, Aschaffenburg argues, the association is made because of the objects' spatial proximity, and not because of the meaning of the word.[56] Again, while it is clear enough why he grouped these pairs under the header "external associations," it is harder not to deconstruct his judgment, as a physician interested in taste might very well see a meaningful connection between the mouth and the nose, just as a horticulturist might see a meaningful connection between the pot and the plant. Lastly, some sound associations are: profile–professor; batiste–battery; crown–chrome; etc., and this is likely to be the category that is most convincingly self-contained.[57] On the other hand, one can easily imagine how the test environment itself can induce the production of rhymes with its sing-song scenario of trigger words and re-

54 Gustav Aschaffenburg, "Experimentelle Studien über Associationen" [Experimental Studies on Associations], in Kraepelin, *Psychologische Arbeiten*, 1:295.

55 Aschaffenburg, 231–232.

56 Aschaffenburg, 236.

57 Aschaffenburg, 241.

sponse words being bounced back and forth between examiner and examined. Moreover, being aware of the hierarchy of associations could also be a contributing factor. If the patients do not know that sound associations are equated with lower mental capacity and lower intelligence in the psychiatrist's framework, they do not try to avoid them. When doctors test each other, on the other hand, being fully aware of what passes for smart answers in the community of university physicians, they always seem to have their own self-perception as cultured and sophisticated people reconfirmed by the test.[58]

As should be clear by now, this kind of classification of associations relies on the subjective perception not only of the subject but also of the person evaluating the test results in many if not most of the cases. When Aschaffenburg provides a carefully compiled table of numbers which shows that at the height of his manic phase in December 1894, his patient produced merely twenty-five internal associations, the numbers then gradually climbing up to the value of thirty-nine at the moment of his release from the clinic in November 1895, he suggests an objective and judgment-free observation.[59] This kind of black-boxing is very effective when the trigger words and response words are not provided and the reader is only presented with neat columns of numbers. That Aschaffenburg was very confident about his own categorizations and did not question the validity of his numbers becomes apparent from his discussion of other experimenter's work.

In participating in the academic debate on word association tests, Aschaffenburg was very critical of some of his colleagues. For instance, he severely attacked Hugo Münsterberg's (1863–1916) classification approach, which he described as "superficial" and "arbitrary."[60] Aschaffenburg doubted that associations like brother–sister or knife–fork were truly based on a relationship in meaning. He argued that, at least in his own case, these associations were not evoked because of their conceptual relationship (kinship, cutlery) but because they co-occurred in spoken language and were formed through the principle of training and experience.[61] Although this reasoning is highly suggestive, it is questionable whether it is actually possible to know how a thought is formed through pure introspection.

Furthermore, with his vision of a hierarchy of associations, Aschaffenburg assumes a hierarchy in mental functioning that his own tests sometimes fail to substantiate. As a case in point, among the test results obtained from association tests with healthy individuals, there was one person who "scored" even more sound associations than patient no. 4. This happened with the case of Doctor M. J. van Erp Taalman Kip (1866–1926), a visiting

58 Aschaffenburg, 288. Aschaffenburg takes pride in the performance of his colleagues, who have produced a number of rather similar associations like colossus–Rhodes (a statue), Apollo–Belvedere (another famous statue), and music–Wagner (referring, of course, to the composer Richard Wagner (1813–1883)) (Aschaffenburg, 289).

59 Aschaffenburg, "Experimentelle Studien über Associationen. III. Theil: Die Ideenflucht," 322.

60 Aschaffenburg, "Experimentelle Studien über Associationen," 227–228.

61 Aschaffenburg, 227.

physician from the Netherlands, who produced forty-four sound associations in a test conducted in March 1895.[62] Aschaffenburg argued this irregularity away by the fact that the subject was a foreigner with limited understanding of the German language who was, therefore, inclined to react more to the sound of the word than to its meaning.

A similar argument was offered in the case of the test results of August Hoch (1868–1919), a Swiss physician who had emigrated to the United States and visited Kraepelin's laboratory in 1894. His word associations showed an anomaly that consisted in a prevalence of what Aschaffenburg conceived of as external associations. In a sequence of three tests, Hoch produced associations that were categorized as translations and, thus, external. In many cases, Hoch gave an equivalent in Latin for the trigger word.[63] According to Aschaffenburg's reasoning, translating was a mental process that involved practice and training (of language skills), not so much thinking in conceptual terms, but this did not mean that he called Hoch's mental faculties into doubt. Other excuses were made for other healthy test subjects when they did not perform as Aschaffenburg expected that healthy people should and would. Tiredness, exhaustion, and lack of sleep were given as reasons for under-performing. Nonetheless, none of these mitigating circumstances seemed to be applicable to the constitution of mental health patients, whose performance was always perceived as the pure expression of their dysfunctional minds.

3.2 Teaching in the Lecture Theater

As I have already outlined in chapter 2, it was considered desirable in the context of the Heidelberg mental hospital to quickly remove from the institution those patients who were of no interest for the research and teaching activities of the clinic. Conversely, there were patients who were kept in the clinic longer than usual because they were exceptionally well suited for demonstrations and experiments.[64] Unlike the "negativistic" dementia praecox patients, manic-depressive patients were considered especially interesting research material because they willingly produced a considerable amount of measurable and seemingly homogeneous research data. Kraepelin's assistant and experimental-psychology enthusiast Aschaffenburg admitted that no other psychosis was more enticing to conduct experiments on than manic-depressive insanity.[65] As we have already seen in the discussion of the association test, Aschaffenburg was especially fascinated by sub-

62 Aschaffenburg, "Experimentelle Studien über Associationen," 263.

63 Aschaffenburg, 262.

64 This phenomenon was not restricted to the Heidelberg clinic. "Talented" patients, who were able to reproduce and show off the symptoms that were expected from them in patient demonstrations usually remained longer in the clinic and had more stage appearance than other patients; see Rainer Herrn and Alexander Friedland, "Der demonstrierte Wahnsinn: Die Klinik als Bühne" [Demonstrated Madness: The Clinic as Stage], *Berichte zur Wissenschaftsgeschichte* 37, no. 4 (2015): 309–331.

65 Aschaffenburg, "Experimentelle Studien über Associationen. III. Theil: Die Ideenflucht," 235.

ject no. 4, who had yielded more "uniform results" than all other examined cases.[66] This "special case" was the patient Hermann Sch. (1851–1899), whose remarkably demonstrable illness was also exploited by Aschaffenburg's other Heidelberg colleagues. Apart from Aschaffenburg's word association tests, Hermann Sch. also appears as one of Gross's subjects, namely, as patient no. 1 in the writing scale experiment, and he is presented as a typical case of a depressed state in Wilhelm Weygandt's textbook of psychiatry, which provides several photographs of the patient as case no. 41.[67] In quite a different format, Hermann Sch. also features in one of Kraepelin's lectures involving patient demonstrations for students.[68] These textual and personal interrelations clearly show how Heidelberg patients served several functions including university teaching, psychophysical research, textbook production, and concept formation.

In many ways, Weygandt's enterprise of creating an "atlas of madness" is reminiscent of the myriads of atlases produced by natural historians in the latter half of the nineteenth century. His richly illustrated textbook is a representative of the "new brand of scientific objectivity" which was characterized by a turn to mechanically produced images in an effort to minimize human interference and to eliminate suspect mediation.[69] But Weygandt's detailed photo-documentation was not the only means to use the patients in order to teach the Heidelberg School's new strand of psychiatry. In the following, I will sketch the medical history of Hermann and show how his illness was exploited for teaching purposes by serving as illustrative material in Weygandt's textbook and being shown off in Kraepelin's lecture theater.

Hermann Sch.'s Highly Demonstrable Illness

From the different documents produced by Kraepelin, Gross, Aschaffenburg, and Weygandt, we learn that patient Hermann Sch. was an insurance inspector who had first been admitted to the Heidelberg clinic in March 1894, when he was 42 years old. Earlier in his life, he had experienced several unhappy relationships. In 1877, he had married a woman "far below his education and status" at the age of 26, and he had subsequently become depressed and gotten divorced.[70] In 1882, he had again been deceived by a woman who later abandoned him. Once more, the patient fell into a dejected mood that his relatives interpreted as a reaction to his unhappy experiences, but not so Kraepelin, who suspected that the patient must have been a little mad prior to this already, since he had taken the unwise

66 Aschaffenburg, 320–28.

67 Wilhelm Weygandt, *Atlas und Grundriss der Psychiatrie* [Atlas and Outline of Psychiatry] (München: J. F. Lehmann's Verlag, 1902), 322–24.

68 Emil Kraepelin, *Einführung in die psychiatrische Klinik: Dreissig Vorlesungen* [Introduction to Clinical Psychiatry: Thirty Lectures] (Leipzig: Verlag von Johann Ambrosius Barth, 1901), 11–15.

69 Lorraine Daston and Peter Galison, "The Image of Objectivity," *Representations*, 1992, 81.

70 Aschaffenburg, "Experimentelle Studien über Associationen. III. Theil: Die Ideenflucht," 320.

decision to marry an unsuitable candidate.[71] Hermann Sch.'s father, as well as two of his brothers, were alcoholics (one sister was considered to be suffering from manic-depressive insanity), and it was also in connection with alcoholism that he had first been hospitalized in Heidelberg. In 1893, Hermann fell sick with delirium tremens and experienced shivers and a variety of disturbing visual hallucinations.[72] This episode was followed by an agitated state, during which he caused public nuisance in pubs by throwing objects out of the window. Hermann was admitted to the clinic as a manic patient and treated with "segregation" (*Isolierung*) and "continuous bath" therapy (*Dauerbad*).[73] During his first stay in the Heidelberg clinic, from March 1894 to November 1895, he was predominantly in a cheerful mood, which Weygandt documented with a photograph showing Hermann simultaneously smoking a cigar *and* a pipe.[74] However, the photograph alone was not sufficient to convey the idea that Hermann was truly mad rather than simply in the mood for jokes. Therefore, Weygandt supplemented some additional information in the text, where he noted that in the manic state, the patient also decorated himself with twigs and flowers, used to sing, smoked two cigars at once, expressed delusions of grandeur, and wrote many letters and other texts.[75] Aschaffenburg conducted most of his word association tests during this manic period as well (December 1894–November 1895).

The second stay in the clinic was, in turn, characterized by a depressed mood, which Weygandt captured in a photograph showing Hermann in bed.[76] Hermann had been admitted to the clinic in January 1896 and could hardly be motivated to perform any kind of activity at all. He was lying in bed, did not move, did not eat, was barely able to speak, and appeared frightened.[77] The depressed state lasted until the patient's death in July 1899. During this second period, Aschaffenburg conducted the second series of his word association tests (April 1896–March 1897), but he regretted that it was very difficult to persuade the patient to take part in the experiments.[78] Gross also performed his writing scale tests during Hermann Sch.'s depressed phase (March 1897), and Kraepelin presented

71 Kraepelin, *Einführung in die psychiatrische Klinik*, 13–14. Kraepelin surmised that the marriage proposal most likely happened during an agitated state.

72 Nowadays, the term delirium tremens is associated with the symptoms which are caused by alcohol withdrawal. In the nineteenth century, the actual causes were disputed, although the connection between alcohol abuse and the psychotic symptoms of delirium tremens were generally accepted. Kraepelin explicitly denied any causal relation between alcohol withdrawal and delirium tremens arguing instead for a metabolic cause (Kraepelin, *Klinische Psychiatrie*, 90).

73 Weygandt, *Atlas und Grundriss der Psychiatrie*, 323. In the context of the clinic "Segregation" could effectively mean "solitary confinement" where the patient was put into a solitary cell, usually naked (Kraepelin, *Allgemeine Psychiatrie*, 320).

74 Weygandt, *Atlas und Grundriss der Psychiatrie*, 324; Figure 116.

75 Weygandt, 323.

76 Weygandt, 323; Figure 114.

77 Kraepelin, *Einführung in die psychiatrische Klinik*, 14.

78 Aschaffenburg, "Experimentelle Studien über Associationen. III. Theil: Die Ideenflucht," 320.

him in his lecture as an exemplary case of circular depression about half a year before the patient died from tuberculous pleurisy in 1899.

The classroom presentation served the double purpose of teaching the new classification of mental disorders and of training the students to spot the signs that point to these disorders. Kraepelin's guided observation was crucial to focus the students' gaze and to transmit the teacher's interpretation of what there was to see. The rhetoric of the demonstration implies objective description, but on close inspection the language is laden with interpretative expressions. Hermann Sch.'s demonstration typically begins with Kraepelin commenting upon the patient's appearance, posture, and expression as the demonstration subject enters the room:

> He is well-built, albeit malnourished, shows an ashen skin and an ailing facial expression. He enters [the room] with small and tired steps, sits down slowly and remains seated in a somewhat hunched position, staring straight ahead with almost no movement at all. Upon questioning he turns his head slightly and answers in a low voice and monosyllabically but to the point. One gets the impression that he has great trouble speaking; his lips are already slightly moving before any sound comes out.[79]

Although the patient can hear all that is being said about him and the manner in which this is being done, he seems to ignore the comments. He himself believes that he suffers from an affective disorder (*gemüthskrank*), but his judgment is of little significance in the demonstration except for establishing the fact that Hermann Sch. is himself aware of being ill. The above quote already contains one of the key observations that Kraepelin wants his students to make in this particular case. He notes that "one gets the impression that he has great trouble speaking," a phrasing that implies that everyone else should have the same impression as the professor. Kraepelin builds upon this "observation" by adding some argumentative thoughts and some more interpretations about the presumable causes behind this symptom:

> [...] It is especially the fact that the answers regarding casual matters are produced slowly as well that shows us that the patient is not impeded by a shyness to express himself but that there is a general impairment of verbal expression. Indeed it is not only that but all of his volitional impulses that are extremely impaired.[80]

This remark, which now interprets the observable slow verbal reaction as an inhibition of volitional impulse, is supplemented by a series of observations made outside of the classroom and intended to support Kraepelin's general assessment. The students are told

79 Kraepelin, *Einführung in die psychiatrische Klinik*, 11.
80 Kraepelin, 12.

that Hermann was unable to get up, to dress, or to occupy himself with anything for the last three years, during which he mostly remained in bed motionless (a scene that was also documented by Weygandt).[81] These additional observations are treated as belonging into the same category of "inhibition of volitional impulse" and eventually this characteristic is declared to be the defining feature of manic-depressive insanity:

> We clearly recognize his efforts to act and to comply with our requests but at the same time [we also recognize] the retardation and impediment that each volitional impulse encounters. Under these circumstances it is permissible to speak of an inhibition of volition in the sense that the transformation of volitional impulses into actions encounters obstacles that can only be overcome slowly and often not by his own force at all. This inhibition is the most salient trait of the pathology by far. In contrast, the saddened and low-spirited mood matters comparatively little; other mental impairments are not discernible for the time being.[82]

Again Kraepelin uses "we" instead of "I," thereby subsuming the students' observation and judgment under his own and encouraging them to believe to see what he sees and believes. The demonstration does not involve much activity on Hermann Sch.'s part. He is later asked to write his name on the blackboard, and he complies with the request after having got up lumberingly (*schwerfällig*).[83] Obviously, Kraepelin deemed these few actions to be sufficient to give a mechanistic interpretation of his ailment while at the same time de-emphasizing the affective side of his illness. The explanations about the supposed nature of manic-depressive insanity are followed by a prognosis and a short description of Hermann Sch.'s illness record, which serves to provide evidence of the alternating nature of the disease. The general structure and sequence of the demonstration is rather typical for Kraepelin's performances in Heidelberg, and the same format was to be encountered in other psychiatric institutions' lecture theaters. In the following section, I will present a similar demonstration performed in the summer of 1902 in Tokyo which not only testifies to the fast dissemination of Kraepelin's teaching but also exemplifies some cultural and linguistic tricks and alterations in demonstrating the mechanic aspect of the disease as well as in illustrating the temporal dimension.

Mrs. Kurosawa's Dance Performance

When Kure Shūzō returned from his four-year-long research trip to Europe, which had taken him mainly to Austria and to Germany, but also to France, in order to assume professorship at Tokyo Imperial University, he took over some of the patients that had been

81 Weygandt, *Atlas und Grundriss der Psychiatrie*, 323; Figure 114.
82 Kraepelin, *Einführung in die psychiatrische Klinik*, 12–13.
83 Kraepelin, 12.

in the care of his predecessors. One such patient who was not released in 1901 but relayed to the care of Kure Shūzō was the former nurse Mrs. Kurosawa 黒澤, born in January 1874.[84] Her medical record reveals that she displayed a joyful mood and a boastful attitude at the time of her hospitalization in December 1899. She was cheerful, telling jokes, and loved to argue. However, she could also become angry and abusive at times. Sometimes, she was seen running through the hallways of the hospital ward, performing sword dances, singing, and reciting. She was boastful and used to discuss matters of loyalty and filial duty, regretting that she had not been born as a boy.[85] At the time of her hospitalization, she might have been diagnosed with mania, but when it became apparent that her condition would switch from mania to melancholia from time to time, her diagnosis seems to have been changed to circular insanity.[86] However, these concepts were to be seriously challenged by Kure, who returned from Europe as a convinced follower of the Heidelberg School and initiated reforms that would banish melancholia and related concepts from the classrooms and hospital wards of Tokyo Imperial University.

In order to illustrate the notion of Kraepelin's manic-depressive insanity to his students, who had until then been taught to see things differently, Kure used the case of Mrs. Kurosawa's illness. When Mrs. Kurosawa was brought into the lecture room of the Sugamo Mental Hospital on July 2, 1902, she walked in with her head hanging down, her body all hunched up and her gaze fixed on the floor. Moving slowly and heavily, she did as she was told and as if she did not apprehend the things around her.[87] Kure asked her how she was feeling and whether she experienced any pain or headache. When he asked her what day it was, she tried to remember how many days had passed by, carefully folding the fingers of her left palm one after another with her right hand.[88]

Time was an essential analytic tool to explain Mrs. Kurosawa's illness. In order to convince his students that the present state of the patient was not conclusive, Kure presented a chart that documented the evolution of her moody states over the last two years and seven months (see Figure 3.5). Kure argued that, although she had experienced alternating states of exaltation (marked in red) and depression (marked in blue), her current state in July 1902 was characterized by a mixture of exaltation and depression (both colors in the same column). For Kraepelin, the existence of these mixed states was one of the proofs that

84 Usually, the names of the patients were not mentioned in public journals. This was also true for Mrs. Kurosawa, whose name only appeared as "Ku. Sa." く、さ、on the first page of the case history. However, she is later addressed as "Mrs. Kurosawa" (*Kurosawa-san* 黒澤さん) in the rendition of the doctor–patient dialogue (Kure Shūzō 呉秀三, "Utsuyū jōtai" 鬱憂状態 [Depressed States], *Iji shinbun* 620 [1902]: 1243, 1244).

85 Kure Shūzō, 1247–1248.

86 Kure Shūzō, 1250.

87 Kure Shūzō, 1243.

88 Kure Shūzō, 1244. In Japan, finger-counting is practiced differently than in Continental Europe or the United States. When counting for oneself, one begins with an open palm and then folds the fingers inwards from the thumb to the little finger.

Figure 3.5: The evolution of Mrs. Kurosawa's illness

there was no real boundary between mania and melancholia.[89] The otherwise gloomy and motionless patient would sometimes show a little smile or make some unexpected movement.[90] The same phenomenon could be demonstrated through Mrs. Kurosawa's case. Although she appeared withdrawn (*ustuhei shite iru* 鬱閉して居る) and brooding (*fusagikonde iru* 閉ぎ込んで居る), Kure believed that her occasional smiles announced the transition towards an exalted state.[91]

Although the mood chart was a convenient tool to visualize the temporal dimension of Mrs. Kurosawa's illness, another trick was even more effective at showing that inhibition could be easily turned into excitation right before the eyes of the audience. To demonstrate that his patient was not as stiff and inanimate as she looked, he encouraged her to perform a sword dance by reciting poems by the famous Japanese historian Rai San'yo 頼山陽 (1780–1832).[92] The patient was known to have performed sword dances before and seems to have been familiar with the text. One of the poems was the famous piece "On a Painting of Kenshin Attacking Shingen" (*fushikian kizan wo utsu no zu ni dasu* 題不識庵撃機山図), which is apparently still recited today and is noted for its rhythm and sound:[93]

> *Bensei shaku-shaku yoru kawa wo wataru*
> *akatsuki ni miru senpei no taiga wo yōsuru wo*
> *ikon nari jūnen ikken wo migaki*
> *ryūsei kōtei ni chōda wo issu*
>
> Sound of the horse whips, softly, softly, crossing the river at night.
> At dawn the sight of a thousand soldiers protecting the great tusk.
> A lasting regret! For ten years, polishing one sword
> Beneath the light of a falling star, the long snake escapes.[94]

89 Kraepelin, *Klinische Psychiatrie*, 372.

90 Kraepelin, 394–399.

91 Kure Shūzō, "Utsuyū jōtai," 1246–1254.

92 It is perhaps an interesting coincidence that the poet himself was also known for his madness, which apparently took the form of changing moods (Kitanaka, *Depression in Japan*, 29). If the patient had known of the connection between the mad poet and her own condition, her performance could also be interpreted as a self-conscious expression of her own insanity. However, there is no indication of this sort in the text. This kind of artistic escape strategy is explored in Hugh Shapiro, "Operatic Escapes: Performing Madness in Neuropsychiatric Beijing," in *Science and Technology in Modern China, 1880s–1940s*, ed. Jing Tsu and Benjamin A. Elman (Leiden: Brill, 2014), 297–325.

93 Haruo Shirane, *Early Modern Japanese literature: An Anthology, 1600–1900*, Translations from the Asian Classics (New York: Columbia University Press, 2002), 919. In the transcription of Kure's lecture, the poems are indicated by the beginning lines (Kure Shūzō, "Utsuyū jōtai," 1254). The first as *Bensei shaku shaku* 鞭聲肅々 and the other verse as (*koromo wa kan ni itari* 衣至骭) which is the first line of the "Former Song of a Youngster" (*Zen heko no uta* 前兵児謡). See Samuel Shooklyn, "Moral Instruction in Budō: A Study of Chiba Chōsaku with a Translation of his Major Work" (PhD diss., McGill University, 2009), 30, for the translation of *heko* as "young boy" instead of "soldier infant" in the Satsuma dialect.

94 Translation by Haruo Shirane in *Early Modern Japanese literature*, 919.

Slowly and with her voice breaking off in between, Mrs. Kurosawa joined in the singing and eventually managed to perform a sword dance on her own.[95] The students and assistants for whom this spectacle was staged were to learn that inhibition and exaltation of the volitional impulses were states that could easily follow one after another and were not, in fact, opposed phenomena. The dance performance was the ultimate proof that mania and melancholia did not exist as independent disease categories. These kinds of presentations were an integral part of psychiatric education in many parts of the world, and it is quite obvious that they shared some elements with a theater performance.[96] Clearly, there is some degree of artificiality or even incitement involved when Kure encourages Mrs. Kurosawa to sing and to dance, as he surely knew she would be willing to do. However, the show would not have been effective without the accompanying interpretation and without Kure lecturing the students on the meaning of what they had just witnessed.

Kure explained the mechanisms involved in the processes of inhibition and exaltation by evoking the image of a bridled horse.[97] In this metaphor, which was also popular in the European context, the human will was subjected to a force that controlled the speed and intensity of movements and speech.[98] Not unlike Gross's "broken clock metaphor," Kure's image of slackened or tightened reins also implied the interference of an external disruptive element, manipulating the "normal" flow of movements. As in Kraepelin's lecture, the depressed state of manic-depressive insanity was ultimately understood as an expression of the inhibited volitional impulse. Because the term *fusagu* (variously written as 鬱ぐ, 塞ぐ, or 閉ぐ) could be used to indicate inhibited movement as well as gloomy moods in Japanese, Kure was able to shift the meaning from "mood disorder" to "physical inhibition" without discarding the translation term used by his teacher Sakaki, who had used the same term to refer to affect-defined melancholia. Through the use of language Kure made it explicit that he understood the concept of manic-depressive insanity in this mechanistic way where the disease was primarily defined by alternating states of inhibition and exaltation. Usually, the Japanese term for manic-depressive insanity, 躁鬱狂, is pronounced *sōutsu-kyō*, but Kure also referred to the illness as *sawaki fusagu-byō* (さわきふさぐ病 [騒塞病]), which could be translated as "agitation-inhibition-illness."[99]

With this new mechanistic conception of the pathological process that could explain both melancholic and manic states, the role of affect became less important. Indeed,

95 Kure Shūzō, "Utsuyū jōtai," 1255.

96 Asti Hustvedt, *Medical Muses: Hysteria in Nineteenth-Century Paris* (London: Bloomsbury, 2012), 74–82; Katja Guenther, *Localization and Its Discontents: A Genealogy of Psychoanalysis and the Neuro Disciplines* (Chicago: The University of Chicago Press, 2015), 49–56; Herrn and Friedland, "Der demonstrierte Wahnsinn," 311.

97 Kure Shūzō, "Utsuyū jōtai," 1245.

98 For the origin and usage of the metaphor in the medical context as well as its moral connotations, see Roger Smith, "The Meaning of 'Inhibition' and the Discourse of Order," *Science in Context* 5, no. 2 (1992): 244.

99 Kure Shūzō, "Utsuyū jōtai," 1251.

when Mrs. Kurosawa was presented to the students in July, she did not show any signs of morbid emotionality. During the patient demonstration, Kure literally said that no pathological changes (*byōhen* 病變) presented themselves in the mental activity (*seishin sayō* 精神作用) of the emotional sphere (*kanjō no hō* 感情の方).[100] As with the Heidelberg School, de-emphasizing affectivity as a distinctive disease criterion had become an important part of Kure's new understanding of classifying mental disorders. His classroom presentation resonates with Kraepelin's characterization of Hermann Sch.'s illness, where "saddened and low-spirited mood" was equally delegated to the rank of the less significant symptoms. This new definition of depressed states exemplified in Kraepelin's and Kure's lectures indicates a general shift toward prioritizing measurable symptoms in psychiatric diagnosis and classification. The performances staged in the lecture theaters illustrated the new interpretations and were a useful tool to transmit the new knowledge to the next generation of psychiatrists. However, none of this would have been possible without the introduction of experimental practices into the laboratory of the clinic.

Psychometric experiments like those described in this chapter gave psychiatry the appearance of a scientific discipline. The numbers produced in the experiments had the appeal of hard empirical facts, although in many cases they were based on subjective perceptions and preconceived ideas. With a fixation on metrics like the one expressed in twentieth-century experimental psychology, one also has to ask the very fundamental question of whether what is measured is actually important, or, as a pointed saying goes, "[n]ot everything that can be counted counts, and not everything that counts can be counted."[101] It is questionable whether the measurable expressions of patients' motor anomalies really provide a more sophisticated explanation of the nature of their illness than an examination that was focused on mood, delusions, and perceptions. This shift towards prioritizing motor functions certainly contributed to the disintegration of older disease concepts such as melancholia, which relied on completely different diagnostic hierarchies. However, it remains disputable whether this shift from qualitative evaluations towards more quantitative evaluations actually corresponded to naturally occurring disease entities that could be differentiated along these lines. The psychological experiment, with its limitations of measuring such attributes as speed and force, certainly introduced a new kind of reductionism into the examination and conceptualization of mental disorders.

In the case of the experiments conducted in the Heidelberg laboratory, there also is a striking correlation between the institutional needs to devise differentiating criteria that could be easily measured at first examination and the design of the new concepts of manic-depressive insanity and dementia praecox. Likewise, it seems very convenient that those disease forms that were less suitable and interesting in experimental settings were the same

100 Kure Shūzō, 1246.

101 William Bruce Cameron, *Informal Sociology: A Casual Introduction to Sociological Thinking* (New York: Random House, 1963) quoted in Muller, *The Tyranny of Metrics*.

that were declared incurable and whose futile treatment could be reduced to a minimum by transferring the patients to long-term hospitalization facilities. The numbers produced through the new experimental techniques served to reinforce the validity of the new concepts, but at the same time, the new concepts guided the directions of inquiry that produced the numbers. In effect, the system seems to have been circular.

On the other side of the globe, Kure's demonstration of Mrs. Kurosawa's illness provides evidence for the fast adaptation and dissemination of the mechanistic model of what we today conceive of as mood disorders. However, other Japanese psychiatrists challenged these views. In the following chapter, I will return to Araki and Kadowaki, my other two Japanese protagonists introduced in chapter 1. When they presented their own classifications of mental disorders at the Tokyo Conference of 1905, they challenged Kraepelin's ideas and, by implication, Kure's adaptation of it. I will closely examine their contribution to psychiatric classification and analyze their attack on Kraepelin, which they mainly fought on conceptual grounds. Along the same dividing line, yet another young Japanese psychiatrist, who had gained much of his experience in American asylums, launched his own repudiation of Kraepelin's dichotomy with the tools of experimental psychology. Following the traces of Matsubara Saburō's lost doctoral thesis on melancholia and the medical cases he examined in the United States will allow us to reimagine an alternative path for classifying mental disorders that was not taken.