

Psychic Waste: Freud, Fechner, and the Principle of Constancy

Suzanne Raitt

Twentieth-century culture is obsessed with waste. We worry about whether or not to recycle it, how to dispose of it, whether it is safe, and what will happen to it when we have finally got rid of it. Detritus has its own taxonomy: “rubbish,” “garbage,” and “litter,” for example, construct it as an essentially random, cumulative phenomenon, a by-product of our daily domestic lives. To call something “waste,” on the other hand, is to invoke its history. Nuclear waste, bodily waste, and medical waste are all the result of specific processes: they gesture back to the productive economies that generated them. Even in these days of recycling, waste is almost always disposed of or repudiated, sometimes indifferently, sometimes contemptuously, and even, on occasion, violently.

This chapter examines the concept of waste in one of the central economies of the twentieth and twenty-first century—the Freudian and post-Freudian psychic economy. The whole question of waste was of course central to the modern world, with its obsession with new technologies, greater efficiency, and increasingly streamlined industrial and domestic processes.¹ In this chapter I show that Sigmund Freud was one of the early architects of modernism, not just in his emphasis on the fragmented and fissured state of the human psyche, but also in his interest in psychic efficiency. Efficiency was not, of course, a term Freud himself would have used, but the concept resonates through his troubled account of the vicissitudes of the human mind. From the very beginning Freud described the psyche in economic terms, as a system for the production, distribution, and consumption of psychic resources, and he devoted his life to the discovery and articulation of the principles around which this psychic economy was organized. If, as Freud believed, the psyche could be seen as an economy, what kind of economy was it: closed or open, extravagant or efficient? Did it, like other economic systems—the human body, for example—generate waste products, and if so, what were they?

I argue here that Freud’s training in the Helmholtzian tradition, and in particular, his intellectual debt to the nineteenth-century physicist Gustav Fechner meant that early in his career he committed himself to a view of the psyche as a profoundly wasteful economy, defined by what Georges Bataille has called “unproductive expenditure,” and structured around the disposal of what I call “psychic waste.”² Freud’s devotion to Fechner’s “principle of constancy” meant that he believed that feelings that could not be used or consumed were treated as the waste products of unwanted stimuli. The main thing was to get rid of them—not to use them but to discharge them. The mind according to Freud was simultaneously inert and extravagant, devoted to throwing out excess energies in an attempt to ensure that its internal environment stayed exactly the same, a procedure which would ultimately lead to the experience of pleasure. Psychoanalysis could accelerate this process: in his theoretical contribution to the 1895 text *Studies on Hysteria* Freud likened psychotherapy to “the opening up of a cavity filled with pus, the scraping out of a carious region.”³ This view of the psychic apparatus shaped most of his subsequent work, including the maddeningly intractable *Beyond the Pleasure Principle*, whose central cameo is of thousands of tiny amoebae in a laboratory experiment drowning in their own waste, “injured,” Freud says, “by the products of metabolism which they extruded into the surrounding

fluid.”⁴ Julia Kristeva implicitly notes the logic of such a connection, commenting in *Powers of Horror* that waste and death are conceptually and symbolically linked: “If dung signifies the other side of the border, the place where I am not and which permits me to be, the corpse, the most sickening of wastes, is a border that has encroached upon everything.”⁵ Waste has the capacity to kill the system that produced it: we might even say that it represents that system’s inevitable mortality. This chapter traces the history of Freud’s intellectual relationship to Fechner and to the scientific contexts out of which Fechner’s work developed, arguing that the concept of psychic waste was central to Freud’s understanding of the psyche in both his therapeutic and his metapsychological work. The problem of psychic waste and its effects lies not only behind Freud’s formulation of psychoanalytic therapeutic technique, but also behind the theory of the death drive, and finally, behind Freud’s vexed and contradictory account of the nature of pleasure.

Central to Freud’s conceptualization of the psyche as a productive system was Fechner’s formulation of the principle of constancy. Building on Hermann von Helmholtz’s 1847 formulation of the first law of thermodynamics, which declared that energy can be neither created nor destroyed, Fechner argued that the overall level of energy in the mind also remained constant: “As far as its course is bound to the course of psychophysical processes and these in turn are bound by the law of the conservation of energy, the mind will itself be bound by that law.”⁶ Implicit in this idea is the image of a system that, left to its own devices, will continue operating forever, transforming its own energy but never depleting it. As Helmholtz noted in 1861, eighteenth- and early nineteenth-century engineering and natural philosophy were dominated by the search for “a machine which would give perpetual motion and produce any mechanical work which they liked. They called such a machine a perpetual mover. They thought they had an example of such a machine in the body of every animal.”⁷ Much of Freud’s early training was with Helmholtzians such as Brücke, Meynert, and Exner, and like them he was fascinated by the idea that the mind and the body were efficient, self-regulating economic systems, capable, in ideal circumstances, of continuing to run indefinitely.⁸ In a letter to Fliess on 20 October 1895, written while he was working on the *Project for a Scientific Psychology*, Freud describes his elation at the prospect of a perfectly harmonized system: “In the course of a busy night . . . the barriers were suddenly raised, the veils fell away, and it was possible to see through from the details of the neuroses to the determinants of consciousness. Everything seemed to fit in together, the gears were in mesh, the thing gave one the impression that it was really a machine and would soon run of itself.”⁹ Freud’s excitement at the idea that he had found the formula which allowed the psyche, like the world, to run indefinitely on its own motive power was an implicit acknowledgement of his conceptual debt not only to Fechner, but to the entire tradition in which Fechner and the Helmholtzians were working.

Indeed when Freud wrote *An Autobiographical Study* in 1925, Fechner was the only forerunner whose influence he was prepared to acknowledge. Of French psychologist Pierre Janet, for example, he wrote: “historically psychoanalysis is completely independent of Janet’s discoveries,” and he declared that any similarities between his thought and that of either Friedrich Nietzsche or Arthur Schopenhauer were merely coincidences. But he eagerly paid tribute to Fechner, commenting that he “was always open to the ideas of G. T. Fechner and have followed that thinker upon many important points.”¹⁰ Henri Ellenberger confirms the truth of Freud’s admission, noting that a “large part of the theoretical framework of psychoanalysis would hardly have come into being without the speculations of the man whom Freud called the great Fechner.”¹¹

Freud’s willingness to recognize his intellectual dependence on Fechner may have derived partly from his anxiety to establish the scientific credentials of psychoanalysis. Emphasizing his debt to Nietzsche or to Schopenhauer would have implied that psychoanalysis was itself a form of philosophy; but claiming Fechner as his intellectual ancestor was to place psychoanalysis firmly in the realms of the experimental sciences. *Elements of Psychophysics*, Fechner’s most influential work and one of the founding texts of physiological psychology, was devoted to establishing “an exact theory of the relation of body and mind,” and Fechner’s final aim was to discover the logarithm by which stimulus was related to sensation: a formulaic, mathematical psychology.¹²

But—and this may have been another reason for Freud’s interest in him—Fechner was also an unwitting pioneer of some of the basic therapeutic principles of psychoanalysis, curing himself of a serious mental illness in the early 1830s. The illness and its cure are described in an autobiography that was published in J.

F. Kuntze's 1892 biography of Fechner, a book that, given Freud's voracious reading habits, his intense interest in Fechner, and some close verbal echoes between Fechner's writing and Freud's, he is very likely to have read. Fechner's illness seems to have been a pronounced case of male hysteria and anorexia. In 1830 he started to suffer from severe depression accompanied by photophobia, and he resigned his position as a professor of physics to spend his days in a darkened room, from which he occasionally emerged wearing "a sort of mask with concave cups of lead in front of the eyes."¹³ In December 1831 he stopped eating and drinking (he notes in his 1847 autobiography that soon he "was no more than a skeleton" and "came near perishing from starvation").¹⁴ The initial stage of his cure depended, in true Freudian style, on a dream:

A lady (Frau Hercher), who had a distant acquaintance with my family and felt much sympathy for my situation, dreamed of preparing a dish which would agree with me: a preparation of raw ham carefully freed from fat and finely chopped, and then strongly spiced and soaked with Rheinwein and lemon juice. [When she awoke and realized that this was only a dream] she made such a dish and brought it to me herself, and I was persuaded to taste of it, which I did with reluctance and without the least confidence. I found that the experiment not only did me no harm but seemed to agree with me. I took daily a few spoonfuls of it and gradually increased the dose.¹⁵

For a time Fechner ate nothing but this highly seasoned meat—manna, it seemed, from the world of sleep. Water and bread disgusted him, and gradually he lost even the power to speak. His final cure was effected by a course of ruthless self-exposure to exactly the phenomena that he hated the most. First, he forced himself to eat bread by chewing it carefully and for a prolonged period of time; next, under the influence of a fierce rage, he suddenly "began to speak quickly and voraciously, without paying any regard to the disagreeable sensations in my head which commonly resulted from the effort to speak . . . [I] was encouraged therefore to speak repeatedly, with a sort of desperate disregard for my head, and I found that it succeeded"; finally, he tried opening his eyes briefly in brightly lit places, a strategy which was much more successful than his previous attempts to accustom his eyes to light by opening them only in dimly lit rooms. When he opened his eyes and for the first time in three years saw the shapes and colors of the flowers in his garden, he was overcome with a sense of their beauty and transcendence, and immediately wrote *Nanna, or the Soul Life of Plants*.

Fechner's account of his cure anticipates much of the language and many of the techniques developed so painstakingly by Freud around the time of the publication of the autobiography in 1892. There are significant verbal echoes, for example, between the autobiography and Freud's later account of the relationship between the conscious and unconscious, *The Ego and the Id*. During his illness, Fechner noted, "my inner man was as it were divided into two parts: my ego and the thoughts. Both fought with one another . . . I sometimes conceived of myself as a rider who was striving to subdue a runaway horse."¹⁶ Thirty years later, Freud described the ego in relation to the id as "a man on horseback, who has to hold in check the superior strength of the horse."¹⁷ Furthermore, Fechner's account of forcing himself to speak without caring either about what he said, or about the pain it caused him to say it, sounds like an early analogue of Freud's technique of free association. Freud would also have been amused by Fechner's description of the cure that came to his lady friend in a dream, and by the fact that for many weeks Fechner would consent to eat his peppery ham only if it had been prepared by Frau Hercher herself. Perhaps, Freud may have wondered, there was a suppressed sexual component both to her dream, and to Fechner's enjoyment of her spicy cooking. Fechner, with his flair for metaphor, his tendency to wild and wayward speculation, and his fascination with the mathematics of the mind, must have seemed to Freud like an ideal predecessor: unafraid, innovative, erratic, and yet a scientist to the last. His influence may lie behind not just Freud's map of the mind, but also behind his pioneering therapeutic method.

Freud's first public discussion of Fechner's work and the principle of constancy occurred in a lecture to a Vienna medical society in January 1893. In the lecture, Freud implicitly acknowledged that the efficient mind-machine that never ran out of steam was an impossible fantasy in a world in which the psyche is

bombarded by impressions that continually disturb its equilibrium. The psyche's task was to erase the unfortunate consequences of those impressions so that the original balance could be restored. The presence of the outside world meant that the psyche could only ever approximate the *perpetuum mobile*, smoothly running on forever. Keeping the level of psychic energy constant required work. "If a person experiences a psychological impression, something in his nervous system which we will for the moment call the sum of excitation is increased. Now in every individual there exists a tendency to diminish this sum of excitation once more, in order to preserve his health." When someone receives a blow from someone else, the diminution of the resulting feelings is effected either through the transformation of the excess psychic energy into physical action (for example, hitting back or "weeping, abusing, raging"), or through its displacement, and eventually the diminution of its intensity by "calling up such contrasting ideas as those of his own worthiness, of his enemy's worthlessness, and so on."¹⁸ Strangely, Freud did not elaborate on the principle of constancy (indeed, he barely mentioned it) in his section of *Studies on Hysteria*, his first major statement of his ideas about psychic functioning, but we can assume that he agreed with his collaborator, Josef Breuer, when Breuer observed "a tendency on the part of the organism to keep tonic cerebral excitation constant." Shouting, jumping for joy, angry words, retaliatory deeds, and sobbing were, in Breuer's view, all ways of discharging increased excitation. But he also commented: "Only some of these reactions, such as angry deeds and words, serve a purpose in the sense of making any change in the actual state of affairs. The rest serve no purpose whatever, or rather their only purpose is to level out the increase of excitation and to establish psychological equilibrium."¹⁹ In its earliest psychoanalytic formulations, then, the principle of constancy was linked with actions undertaken simply as a means of discharge, and with energy that was harmlessly expelled into the world (Breuer calls it "purposeless motor action").²⁰ The consequence of a failure to discharge or expel was a feeling of unpleasure, a failure of psychic health, and often, in Freud's opinion, one or more hysterical attacks: he wrote in an early sketch for the *Preliminary Communication*: "any impression which the nervous system has difficulty in disposing of by means of associative thinking or of motor reaction becomes a psychological trauma."²¹ It seems, then, that we can adapt Freud's adage in *On Narcissism*, "we must begin to love in order not to fall ill," and say instead "we must learn to waste energy in order not to get sick."²² Surplus excitation must be got rid of, whether it is used or not, and the basic function of the human psyche is to identify, to transform, and to discard. In the late nineteenth century, when increased efficiency was the watchword of industrial and domestic engineering, the mind as Freud described it was a peculiarly extravagant and wasteful system.

Fechner's work was central again to one of Freud's most substantial sole-authored early works, the posthumously published *Project for a Scientific Psychology*, written in 1895. Perhaps in response to his earlier descriptions of an inner world that was plagued by material that needed to be disposed of, the *Project* seeks to quantify precisely the effects of the principle of constancy on the mind, as if to minimize the profligate nature of the mind by measurements and analyses that prove the psyche is logical and systematic after all. Freud called the text a description of the "economics of nervous force," along the lines of Fechner's attempt to establish a mathematical psychology in *Elements of Psychophysics* thirty-five years earlier.²³ Resplendent with algebraic symbols, the *Project* aims "to represent psychological processes as quantitatively determinate states of specifiable material particles," and in order to do this, Freud adopts the letter "Q" to represent "neuronal excitation as quantity in a state of flow." The *Project* assumes that "neurones tend to divest themselves of Q," a principle that Freud calls "neuronal inertia"; thus the *Project* is essentially an attempt to quantify the principle of constancy.²⁴

Freud, then, spent the early years of his career exploring Fechner's notion that all the psyche's frenzied activity was designed merely to prevent change. In the 1893 lecture and two years later in the *Project*, the psyche appears as an enormously active but highly inefficient economy. In Freud's account, both the ego and its attendant psychic apparatus are constantly working toward a profoundly conservative goal, the restitution of an earlier state of affairs. In the process considerable amounts of energy are moved, transformed, and expelled, all in the name of avoiding unpleasure or illness by keeping things the same. Excess energy and disturbance had to be expelled partly because they threatened to disrupt the efficient functioning of the

psychic machine, which the principle of constancy was struggling to protect. The psyche registered surplus excitation as displeasure, so its discharge was synonymous, at this point in Freud's thinking, with feelings of pleasure and release.

The idea of a world in which everything stayed constant was appealing also because it seemed to promise a world without loss. If the psyche could be sheltered from change by the discharge of surplus energy, then the world and everything in it might be imagined to rest in one endless moment. Freud himself entertained the fantasy of a world without death in 1920, when he wrote in *Beyond the Pleasure Principle* that our assumption that "all living substance is bound to die from internal causes" may be simply "another of those illusions" which we have created to help us endure the anguish of the human condition.²⁵

Nonetheless, even though the first law of thermodynamics allowed and even encouraged this kind of fantasy, the formulation of the second law of thermodynamics in 1852 was implicitly a recognition of time and of mortality. The second law of thermodynamics states that whenever energy is transformed, for example when heat is converted into work, some of that energy is dissipated and lost. As P. M. Harman explains, Thomson, the author of the second law, resolved the apparent incompatibility between the two laws by arguing that "the energy is wasted but not destroyed."²⁶ Stephen Brush comments, "by introducing the notion of irreversible heat flow to explain why real engines cannot attain the maximum efficiency, thermodynamics makes a statement about the direction of time in our world."²⁷ If work always involves the waste of energy through heat loss, then time can move only in one direction—the direction of entropy and, eventually, of universal death. For Victorian scientists, waste was correlated with mortality on a global scale. If the idea of the principle of constancy had allowed Freud to imagine a world that could keep going forever, the second law of thermodynamics threatened to undermine that wistful vision. Indeed, as far as the psyche was concerned, the first law of thermodynamics as it was expressed in the principle of constancy implied the apocalyptic pessimism of the second. If, in order to keep the level of psychic excitation constant, the mind was continually discharging energy, like the universe it would surely eventually run out of steam. Was it possible, Freud wondered, that in order to stay well, the psyche, in ridding itself of unwanted disturbances, deliberately brought about its own demise? Fechner's early influence on him meant that the idea of a death instinct, not articulated explicitly until 1920, nonetheless shaped Freud's thinking from the first, giving it its characteristically Schopenhauerian, disillusioned tone. How else are we to explain the doctor who, at the very outset of his career, described his basic aim as the transformation of "hysterical misery into common unhappiness?"²⁸

It was the logic of the second law of thermodynamics that Freud developed in 1920 in the notoriously cryptic *Beyond the Pleasure Principle*, the first text since the *Project for a Scientific Psychology* in which he cited Fechner explicitly, noting his "principle of the 'tendency towards stability,'" and his association of pleasure with the maintenance of stable levels of excitation within the psyche.²⁹ Signs of Freud's return to Fechner are all over the text, as if his reading of the 1873 article cited in the bibliography reminded him of a whole range of Fechnerian concepts which he had almost forgotten. It was Fechner, for example, who first coined the phrase *Lustprinzip*, or pleasure principle, in an article published in 1848; and Fechner too was among those who proposed that the universe operated through repetition and return: "Now one finds that, in many other systems under the influence of forces residing in them, there takes place a circular or oscillating motion of a kind such that their parts always return to a given position after a lapse of time."³⁰ The return to Fechner was not entirely easy, however, since in revisiting some of the questions Fechner's work had opened up to him many years before, Freud was finally forced to acknowledge their pessimistic import. Until he wrote *Beyond the Pleasure Principle*, Freud had managed on the whole to avoid the implications of Fechner's definition of pleasure as a decrease of tension, and of his own definition of psychic health as the simple discharge of excess energy. Now, in *Beyond the Pleasure Principle*, he pushed both those concepts to their logical conclusion: if, as he and Fechner had argued, the aim of the psyche and therefore of the organism is to keep the level of excitation constant, or even nonexistent, then its ultimate aim is death. Or, as he puts it:

It seems, then, that an instinct is an urge inherent in organic life to restore an earlier state of

things which the living entity has been obliged to abandon under the pressure of external disturbing forces; that is, it is a kind of organic elasticity, or, to put it another way, the expression of the inertia inherent in organic life. . . . We shall be compelled to say that “*the aim of all life is death.*”³¹

There is nothing in this remarkable paragraph which was not already implicit in the 1895 *Project*: the tendency to reduce increased levels of excitation in an attempt to return them to an earlier equilibrium; the principle of “neuronal inertia”; and finally, reluctantly, an acknowledgement that the ideal level of excitation for an organism determined to maintain the lowest level possible is zero, impossible for a living creature to attain. This is simply Fechnerian psychophysics, taken to the logical conceptual conclusion that, until 1920, Freud had been reluctant to acknowledge.

However logical the theory of the death drive appeared, however, Freud seems to have felt troubled in the early 1920s at the paradox that pleasure and the maintenance of psychic health were implicated in the organism’s inevitable mortality. He returned to the problem four years later, in “The Economic Problem in Masochism,” when he tried to demonstrate that the dominance of the principle of constancy did not inevitably mean that pleasure was to be associated with an impulse toward death. He attempted to distinguish between the principle of constancy and the pleasure principle, arguing that since an increase in sexual tension is pleasurable, pleasure could not be automatically associated with a decrease of tension and the restoration of an earlier, less excited state. In other words, pleasure was no longer a simple function of the principle of constancy, now revealed to sustain the death instincts. Rather, pleasure, he now declared, was an opposing and rival principle of psychic organization: “we must perceive that the Nirvana-principle, belonging as it does to the death instinct, has undergone a modification in living organisms through which it has become the pleasure principle, and we shall henceforward avoid regarding the two principles as one.”³² But he had already noted the anomalous nature of sexual pleasure twenty years earlier, in the *Three Essays on the Theory of Sexuality*, without seeing any reason to modify his understanding of the relation between pleasure and the principle of constancy.³³ What caused him to change his mind? It is hard not to conclude that it was only as a way of avoiding the implications of the theory he had outlined in *Beyond the Pleasure Principle* that finally, toward the end of his career, he decided to distinguish the pleasure principle from the principle of constancy. He balked at the idea that pleasure might be associated with either waste, self-destruction, or death, although such an association was already implicit (but not articulated) in his earliest accounts of sexuality. As Leo Bersani carefully explains, in the *Three Essays* Freud placed cruelty and aggression at the heart not just of infantile sexuality, but of adult sexuality as well.³⁴ For Freud, Bersani argues, sexuality is a “a condition of broken negotiations with the world, a condition in which others merely set off the self-shattering mechanisms of masochistic *jouissance*.”³⁵

“The Economic Problem in Masochism” thus represents Freud’s last-ditch attempt to avoid the consequences of his intellectual dependence on Fechner. As soon as he had decided that the psyche was governed by the principle of constancy, it followed logically that surplus excitation must be discarded in order to protect the psyche’s equilibrium. But the waste of energy entailed in the labor of self-regulation meant that the psyche, like the universe, was destined to bring about its own demise by the very processes by which it sought to sustain its own existence. Designed primarily as a mechanism for the discarding of material that it could not use, the Freudian psyche could also be seen as a mechanism designed to die by degrees. The principle of constancy, which at first seemed to Freud to aim to protect the psychic economy and to ensure that it would continue to run smoothly and indefinitely, gradually came to seem like its death warrant. Freud’s work was thus structured by the paradoxes of nineteenth-century thermodynamics. In taking Fechner as his only worthy predecessor, Freud unwittingly committed himself to a vision of a world and a psyche structured by the need to produce waste: structured, in other words, by its own death.

NOTES

1 See G. R. Searle, *The Quest for National Efficiency: A Study in British Politics and Political Thought 1899–1914* (Berkeley: University of California Press, 1971), for a discussion of the efficiency movement in Britain at this period; and see also Ellen Lupton and J. Abbott Miller, *The Bathroom, the Kitchen and the*

Aesthetics of Waste (New York: Princeton Architectural Press, 1992), for information about new fashions in home design, including a discussion of William Stumpf's "metabolic house," 70.

- 2 Georges Bataille, "The Notion of Expenditure," (1933) reprinted in *Visions of Excess: Selected Writings, 1927—1939*, trans. Allan Stoekl (Minneapolis: University of Minnesota Press, 1985), 118.
- 3 Sigmund Freud and Josef Breuer, *Studies on Hysteria* (1893—1895), vol. 2 of *The Standard Edition of the Complete Psychological Works of Sigmund Freud*, trans. and ed. James Strachey (London: Hogarth, 1966—1974), 305.
- 4 Freud, *Beyond the Pleasure Principle* (1920), vol. 18 of *Standard Edition*, 48.
- 5 Julia Kristeva, *Powers of Horror*, trans. Leon S. Roudiez (New York: Columbia University Press, 1982).
- 6 Gustav Fechner, *Elements of Psychophysics* (1860), trans. Helmut E. Adler (New York: Holt, Rinehart and Winston, 1966), i, 31.
- 7 Hermann von Helmholtz, "The Application of the Law of the Conservation of Force to Organic Nature," (1861) reprinted in *Selected Writings of Hermann von Helmholtz*, ed. Russell Kahl (Middletown: Wesleyan University Press, 1971), 115.
- 8 Frank J. Sulloway points out, however, that by the time Freud began his studies, Helmholtzian biophysics was already on the retreat. See Frank J. Sulloway, *Freud, Biologist of the Mind: Beyond the Psychoanalytic Legend* (New York: Basic, 1979), 65-67. For further discussion of Freud's teachers and their influence on his thought, see James Strachey, "Editor's Introduction," in vol. 2 of *Standard Edition*, xxii; Ernest Jones, *The Life and Work of Sigmund Freud*, 3 vols. (New York: Basic, 1953), 368; Joseph Sandler, Alex Holder, Christopher Dare, and Anna Ursula Dreher, *Freud's Models of the Mind* (Madison, Conn.: International Universities Press, 1997); and Peter Amacher, "Freud's Neurological Education and Its Influence on Psychoanalytic Theory," in *Psychological Issues* 4, no. 4 (New York: International Universities Press, 1965).
- 9 Freud to Fliess, 20 October 1895, vol. 1 of *Standard Edition*, 285.
- 10 Freud, *An Autobiographical Study* (1925), vol. 20 of *Standard Edition*, 59.
- 11 Henri Ellenberger, *The Discovery of the Unconscious: The History and Evolution of Dynamic Psychiatry* (New York: Basic, 1970), 218.
- 12 Fechner, *Elements of Psychophysics*, vol. 1, xxvii.
- 13 Gustav Fechner, *Religion of a Scientist: Selections from Gustav Th. Fechner*, ed. and trans. Walter Lowrie (New York: Pantheon, 1946), 39.
- 14 Cited in Fechner, *Religion of a Scientist*, 38.
- 15 Fechner, *Religion of a Scientist*, 38.
- 16 Fechner, *Religion of a Scientist*, 40.
- 17 Freud, *The Ego and the Id* (1923), vol. 19 of *Standard Edition*, 19.
- 18 Freud, "On the Psychological Mechanism of Hysterical Phenomena: A Lecture" (1893), vol. 3 of *Standard Edition*, 36—37.
- 19 Freud and Breuer, *Studies on Hysteria*, vol. 2 of *Standard Edition*, 198, 202.

- 20 Freud and Breuer, *Studies on Hysteria*, vol. 2 of *Standard Edition*, 197.
- 21 Freud, “On the Theory of Hysterical Attacks,” in Sketches for the “*Preliminary Communication*” of 1893 (1892), vol. 1 of *Standard Edition*, 154.
- 22 Freud, “On Narcissism: An Introduction” (1914), vol. 14 of *Standard Edition*, 85.
- 23 Freud to Fliess, 25 May 1895, vol. 1 of *Standard Edition*, 283.
- 24 Freud, “Project for a Scientific Psychology,” vol. 1 of *Standard Edition*, 289, 295.
- 25 Freud, *Beyond the Pleasure Principle* (1920), vol. 18 of *Standard Edition*, 44—45.
- 26 P. M. Harman, *Energy, Force and Matter: The Conceptual Development of Nineteenth-Century Physics* (Cambridge: Cambridge University Press, 1982), 57.
- 27 Stephen G. Brush, *The Temperature of History: Phases of Science and Culture in the Nineteenth Century* (New York: Burt Franklin, 1978), 11.
- 28 Freud and Breuer, *Studies on Hysteria*, vol. 2 of *Standard Edition*, 305.
- 29 Freud, *Beyond the Pleasure Principle*, vol. 18 of *Standard Edition*, 9.
- 30 The word *Lustprinzip* is used in Fechner, “Über das Lustprinzip des Handelns,” *Fichtes-Zeitschrift für Philosophie und philosophische Kritik* 19 (1848), 1—30, 163—94. The quotation is from *Elements of Psychophysics*, 26.
- 31 Freud, *Beyond the Pleasure Principle*, vol. 18 of *Standard Edition*, 36, 38.
- 32 Freud, “The Economic Problem in Masochism” (1924), vol. 19 of *Standard Edition*, 160.
- 33 See Freud, “Three Essays on the Theory of Sexuality” (1905), vol. 7 of *Standard Edition*, vii, 209.
- 34 See “Sexuality and Esthetics” in Leo Bersani, ed., *The Freudian Body: Psychoanalysis and Art* (New York: Columbia University Press, 1986), 29—50; especially 31—40.
- 35 Bersani, *The Freudian Body*, 41.