

# The Nature of Sleep

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## THE EMERGENCE OF SLEEP

In April of 2004, only a few months into my fieldwork, I was struck by the level and variety of doubt expressed by the physicians at the Midwest Sleep Disorder Center (MSDC). The MSDC is a group of physicians recognized in the field as experts in many areas of sleep medicine, especially parasomnias—such as sleepwalking, sleep-related eating, and REM behavior disorder.<sup>1</sup> Dr. Richards, the clinic’s senior researcher and a neurologist by training, began the weekly departmental rounds. Generally, these consisted of case studies presented by the assembled clinicians and fellows, but at times rounds wandered into more philosophical discussions or ribald joking. On this day, Dr. Richards asked Dr. Pym if he had seen any patients of note. Pym was trained as a pediatrician, and his patients, at both the MSDC and the neighboring Children’s Hospital, were mostly adolescents and young children. Pym had been in Nicaragua

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<sup>1</sup> This paper is based on research conducted at a sleep disorders clinic and among sleep-disordered patient support groups. In addition, some data and subjects were solicited through websites that focus on sleep disorders and social and medical support (especially “Talk About Sleep”). I was welcomed into my primary fieldsite, referred to in this paper by the pseudonyms the Midwest Sleep Disorder Center (MSDC) at the Mississippi County Medical Center (MCMC), in part because of my perceived ability to step outside of the disciplinary boundaries of the researchers and clinicians I worked among, who are also named pseudonymously. As a group, the physicians at MSDC had become interested in the social and cultural dimensions of sleep, and my working with them often entailed reporting on my ethnographic, ethnologic, and archival research for their edification. Over the ensuing thirty months, I attended weekly staff meetings, local support groups, and national professional meetings, and also spent nights in the clinic, observing patients sleep. I was able to recruit interviewees at each of these sites, including patients, their bed partners, clinicians, researchers, and support group facilitators. I subsequently conducted a year of research in the Chicago area, primarily studying sleep disability support groups, and pursuing sustained archival research in the University of Chicago’s Nathaniel Kleitman archive. Kleitman was the founder of twentieth-century sleep science and medicine.

for the previous three weeks as part of a volunteer program to provide medical aid to the rural poor, and so had no cases, but he took the opportunity to make some observations on sleep disorders in Central America. He remarked that most of the places he had been to had about eleven hours of night and thirteen of daylight, and with only intermittent electrical lighting in the evening, most people went to bed at nightfall and arose with the sun. As a result, he postulated, most of the sleep disorders that physicians dealt with in the United States were not found there. He went on to blame electric lighting for many of the sleep problems in the United States—including insomnia and advanced and delayed sleep phase disorders—since it negatively affected biological impulses to sleep. Pym claimed that sleep disorders were “rare” in Nicaragua. He said most children there slept with their parents, who attended to their sleep problems as they happened, and so they did not develop into more acute pathological forms. This led into a broader conversation about light and its effects on human sleep patterns, in which some of the discussion revolved around sleeplessness in intensive care units; apparently, Richards reported, many people never entered REM sleep while in the units due to lighting disruptions, which, he said, might account for “ICU psychosis,” as people hallucinated due to sleepiness. At this point, Dr. Blake, a young pediatrician, remarked in relation to the newness of sleep medicine, “We’re all flying by the seats of our pants,” to which Richards said, “We don’t know anything.”

The rhetorical move from the rural space of Nicaragua to the seemingly modern space of U.S. intensive care units is a dramatic one, and the juxtaposition sets the stage for understanding sleep at the turn of the twenty-first century, and the centrality of doubt in the practice of sleep medicine. How is it that a group of world-respected sleep researchers and clinicians, in front of an audience of postdoctoral researchers, medical residents in rotation, nurses, medical technicians, and fellow researchers, can express such fundamental doubts about the very basis of their practice? This doubt is the side-effect of an orthodoxy in thought that has resulted in the increased medicalization of sleep (Conrad 2007; Kroll-Smith 2000; 2003). A stable, yet open, definition of sleep has allowed for a proliferation of sleep disorders. The success of sleep medicine in the United States since the 1970s, and particularly in the 1990s and 2000s, has everything to do with this open definition of sleep. However, as I will explain, it is precisely because of its openness that sleep is now subject to doubt.

William Dement, the father of American sleep medicine, in his popular history and description of sleep medicine, *The Promise of Sleep*, defines sleep by “two essential features”: “The first, and by far the most important, is that sleep erects a perceptual wall between the conscious mind and the outside world.... The second defining feature of normal sleep is that it is immediately reversible. Even when someone is deeply asleep, intense and persistent stimulation will always awaken the sleeper.... [In addition, sleep] occurs naturally, unlike coma, anesthesia, or hypnosis, which require injury, drugs, or

some other outside influence; and it occurs periodically—daily in humans” (Dement and Vaughan 1999: 17). This definition leaves out something central to American understandings of sleep: the assumption that proper sleep is consolidated, that it occurs in a unified block and usually at night. Dement’s definition is conceived in tandem with an understanding of the circadian rhythm that underlies human activity and aligns human action with “nature.” Dement later writes: “This precise time mechanism [the circadian rhythm] plays a fundamental role in the wide variations of sleepiness and alertness that we experience throughout every day, keeping us alert during the daytime and allowing us to sleep during the night—as nature intended” (ibid.: 76). Thus what underlies Dement’s conception of human sleep—and, by extension, dominant sleep science and medicine throughout the second half of the twentieth century—is the presumption that normal sleep is periodic, consolidated, and nocturnal, and that this schedule is aligned with nature. To return to the clinic, the group’s questions spurred by Dr. Pym’s visit to Nicaragua arose because sleep was not acting in accord with this orthodox definition—individuals were sleeping in less consolidated, more flexible schedules. Sleep’s nature seemed to be otherwise.

Doubt is central to the practice of sleep medicine at the turn of the twenty-first century. There are doubts in allopathic medical practice more generally, but I suggest they are more pervasive in sleep medicine than in other sub-disciplines, due precisely to the hegemonic understanding of the nature of human sleep forwarded by Dement and his peers. The biological mechanisms that produce sleep in humans and all animal life on Earth remain beyond scientific explanation; the last few years have seen the publication of a number of papers subtly revising dominant theories of sleep and replacing “global” theories with “local” ones.<sup>2</sup> These twin forces—the increasing orthodoxy of allopathic medicine and the unsettling of scientific paradigms—come in the wake of an increased integration of non-allopathic traditions, especially acupuncture, into mainstream American medicine (Becker 2004; Bivins 2007; Zhan 2009), and development of more complex “systems” thinking about health that is attentive to body-environment interactions (Lewontin 1993; Martin 1994). Both have opened the orthodoxy of allopathic science and practice to other possibilities. The doubts are about what counts as medicine, what counts as pathology, and what is to be done. How natural is human sleep? What are the limits of variation beyond which sleep becomes pathological? And what are the roles of the patient and doctor, medicine and society?

<sup>2</sup> As Mahowald and Schenk discuss (2005), global theories of sleep assume that the whole brain is sleeping at once; local theories of sleep allow some parts of the brain to be awake and others asleep, at the same time, with sleep occurring when a majority of the brain is asleep. This theory was derived from observation of contemporary sleep medications, which produced “zombie” states, wherein individuals appear awake but are actually asleep (see, for example, Liddicoat and Harding 2006).

In this article I focus on the developments in allopathic medicine around these questions, particularly as they relate to two qualities ascribed to humans: the cultural and behavioral flexibility of sleep, and its biological and thus natural inevitability. The certainty of particular models of sleep, like Dement's, depend on making sleep inevitable. When it is shown to be more flexible than assumed, as in the doctors' discussion recounted above, the possibilities for doubt become apparent. The foci of earlier sleep medicines in the United States and Europe alternated between what was understood to be "cultural" or "natural" forces related to sleep, the former being subject to control through proper habits, the latter the object of widespread hygienic projects. The habitual and the hygienic are intimately tied to ideas about flexibility and inevitability. In the case of habit, one's everyday practices are seen to affect one's relationship with nature, usually negatively, with consequences meted out in the form of ill health. Personal choice—flexibility—leads inevitably to poor health. In the case of hygiene, the proper ordering of society in alignment with nature leads to both individual and social well-being. Social order leads to an efficient relationship with nature. Which discourse and attendant practices are dominant at any given point indexes existing attitudes toward the nature and culture of sleep, including perceptions of sleep's importance and what it is important for. Moreover, apart from whether sleep is thought of as subject to habitual or hygienic practice, its status as natural or cultural often shifts, and these shifts shape the practice of sleep medicine, the treatment of patients, and the reification of "normal" sleep patterns. They can also breed further doubts about allopathic practice.

But what, we must ask, is doubt? I want to think of doubt as a problem specifically associated with the movement away from disciplinary institutions toward what Gilles Deleuze has called "control societies" (1995 [1990]). Implicit in much of Michel Foucault's work on disciplinary institutions is the need of those in power to make their claims to power certain, whether or not their knowledge is certain (Mathews 2005). This is the case in the moral order necessary to align criminals with (Foucault 1995 [1975]), which finds means for intervention in individual behaviors. It can also be seen in the production of the categories of perversion and pathology in psychiatry (Foucault 1988 [1961]), which also require behavioral modification. Most relevant here is the nosologic delineation of treatment in medical practice (Foucault 1994 [1963]), compelling medical intervention. Deleuze suggests that disciplinary institutions have been replaced by societies that take as their focus the control of individuals, and that rather than specific institutions determining their lives this disciplinary function has become more diffuse throughout everyday life. This control is meted out through the modulation of expectations rather than the static basis of disciplinary practice. There are no alternatives to discipline because discipline is predicated on certainty; variations are always aberrations and require extermination or correction. I argue—extending

Deleuze's earlier formulation—that because of its constant modulation of expectations, control allows for the possibility that things might be otherwise. Control societies are based, on both the levels of individuals and institutions, on the presence of doubt. In both cases, the result is the same: individuals establish their subjective sense of self and other through institutions external to the individual. The critical difference in control societies is that the terms by which one makes legitimate claims to being a subject are always about to change, and the logic of their transformation is obscure. I can only sketch these theories here, but they are vital to understanding the difference between nineteenth-century sleep medicine, which was properly in the realm of disciplinary praxis, and twentieth-century sleep medicine, which was more concerned with control. Whereas nineteenth-century physicians were quite certain what sleep was and how to treat its pathologies, twentieth-century physicians had their doubts, because they had adopted a definition of sleep that allowed them to claim many things as sleep and its disorders, based upon a static conception of sleep's nature. The desire to draw public attention to sleep, to make sleep medicine a vital and thriving sub-discipline of allopathic practice, inadvertently exposed sleep science and medicine to paradigm-questioning doubts.

The proliferation of sleep medicine depended on the development and mobilization of a diverse set of nosological categories: etiologies and clusters of symptoms that could be enveloped in syndromes necessitating medical intervention (Barthes 1988: 202–15; Foucault 1994 [1963]). Symptoms and etiologies are taken together to understand a disease's cause and manifestation, and to determine the therapies required to alleviate its symptoms if not cure it outright. Developing nosologies requires aggregates of data that will reveal the spectrum of possibilities inherent in any disease category, as well as the effects of treatments. Etiologies may be unknown, but there are no diseases without symptoms—hence “idiopathic” insomnia, sleeplessness without a known cause. Sleeplessness can be treated with no knowledge of why it is occurring, though the treatment may bring side effects. In the 1950s, Pickwick Syndrome (named for the Charles Dickens character), now known as Obstructive Sleep Apnea, was the first modern sleep disorder assigned a nosologic category. It occurred during sleep, and belonged to sleep medicine. More followed in the 1970s, including narcolepsy, and in the 1980s and 1990s even more were defined: Rapid Eye Movement Behavior Disorder, Restless Legs Syndrome, “excessive daytime sleepiness,” and parasomnias, like sexsomnia. This proliferation of nosologic categories was driven in part by the development of new therapeutic technologies and pharmaceuticals. More importantly, it expressed a greater certainty about the nature of sleep and its pathological variations. Yet this very certainty raised fundamental doubts in sleep science and medicine.

One of my first introductions to doubt in the clinic was a discussion of how one might develop a technology to test for sleepiness. The question was posed by Dr. Xavier, the senior researcher, trained as a neurologist, who

founded the clinic in the 1970s. He raised the issue in the context of insurance agencies being wary about funding operations for patients who require extensive or expensive surgery to alleviate symptoms related to “excessive daytime sleepiness,” a relatively new sleep disorder designation.<sup>3</sup> Xavier worried that insurance companies would demand objective measures of sleepiness rather than allowing patients and medical professionals to subjectively gauge the impairments of patients based on individual or clinical experiences. Dr. Richards observed that, despite the many tests that existed, no two measured the same thing, although all purported to measure “sleepiness.” He went on to describe a recent invention that measured sleepiness via a palm pilot or similar device. Richards opined that most people were performance driven at work and did not have the time to sit down for ten minutes every hour to take a test to gauge their sleepiness, as was required to establish the long-term symptoms that most disordered sleepers reported. Other physicians present raised a “continuous performance test” that some neuroscientists used, but this was problematic too, since, as the name indicates, it required a continuous interaction between the sleepy person and a computer.

A more fundamental question is: how is sleepiness to be measured when it is unclear what sleep is? Moreover, how can one test for sleepiness when the test itself might provoke alertness? At the end of the twentieth century there was an increased push to develop technologies to gauge sleepiness as a result of campaigns against drowsy driving in the United States. Many states hoped to arm police officers with a portable technology (with the breathalyzer as a model) to ascertain the alertness levels of drivers who caused accidents. What this discussion revealed was the uncertainties that sleep physicians had regarding sleepiness as a concept, which were only compounded by growing evidence of local processes of sleep in the brain in which parts of the brain may be asleep while a person appears awake (Mahowald and Schenk 2005). The inability to properly identify the nature of sleepiness is due to an inability to fully explain what sleep itself is. Dement’s definition depends upon a negative understanding of sleep: sleep is not coma, anesthesia, or hypnosis, but “natural.” Since Nathaniel Kleitman’s work in the first half of the twentieth century, sleep has been defined in negative language as not being awake, but from which wakefulness can be provoked. This ambiguous definition means that any altered state other than these unnatural states *might* be sleep, and that sleep’s manifestations are knowable only after the fact—when the sleeper can be roused. How does one test for sleep when sleep is so open to possibility?

In what follows, I first address the development of sleep science and medicine in the nineteenth century. I focus on two progenitors of sleep as a medical concern, Robert Macnish and William Whitty Hall, who sleep scientists have

<sup>3</sup> For a discussion of this nosologic category, see Kroll-Smith 2003.

since written out of the history of sleep science.<sup>4</sup> Macnish and Hall participated in the development of two registers in which health and human behavior are thought about: the habitual, and the hygienic, respectively. For Macnish at the turn of the nineteenth century, sleep was about care of the self, about self-management (Elias 2000 [1939]; Foucault 1998 [1982]). For Hall, writing at the height of the industrial revolution, the control of sleep was about the proper ordering of all of society (Armstrong 2002; Arnold 1993). I am interested in how both Macnish's and Hall's understandings of sleep were already doubtful, already flexible. Despite this attributed flexibility, they saw the management of sleep as a disciplinary means to align individuals and society with nature. I trace their thought through two central texts, Macnish's *Philosophy of Sleep* (1824) and Hall's *Sleep* (1861), which display the breadth of their thinking and its underpinnings in human behavior and society. For both men, nature and society, rather than being purified of one another, were inherently interrelated, and nature provided the disciplinary basis for society and individual lives.

I then turn to what the erasure of Hall's and Macnish's contributions has permitted in the development of mainstream sleep science and medicine, how the exclusion of historical sleep medicines has led to the formation of particular understandings of sleep's nature, especially through the work of William Dement. Dement's work brings the two registers of habit and hygiene into close conceptual proximity through an understanding of the inevitability of nature as a foundation for the control of individuals and institutions. Whereas for Macnish and Hall there is interplay between society and nature, and this interplay is flexible, for Dement, the consequences of socially modifying sleep's nature can only result in negative effects for the individual, and society generally. The certain understanding of modern sleep medicine provided a basis for the elaboration of manifold sleep disorders, leading to the control of individuals through medicine. However, this certainty eventually led to the return of doubts in clinical and scientific practice. In my final section I return to contemporary practice and the physicians at the MSDC to consider doubt and certainty regarding the nature of sleep and their role in the reification of sleep and its disorders.

#### MAKING MODERN SLEEP

Nineteenth-century sleep medicine and science is emblemized in the work of two figures, Robert Macnish and William Whitty Hall, who helped develop the

<sup>4</sup> Nathaniel Kleitman's magnum opus, *Sleep and Wakefulness*, published in 1933 and updated and republished in 1963, includes an enormous bibliography of sleep research; 4337 annotated bibliographic entries fill 166 of its 552 pages. William Whitty Hall is omitted, and Macnish is mentioned only in passing: "As early as 1834 Macnish knew that the sleeper changes his position during the night" (1963 [1933]: 310). Kleitman mentions Macnish two pages later in a list of forty-six authors who contributed to the "information and advice on the hygiene of sleep." Though not erased, Macnish's importance is minimized.

medical study of habit and hygiene. Through their work we can trace the movement from sleep as a personal and individuated concern to sleep as a public and governmental concern. This transition was later repeated over the course of twentieth-century sleep medicine. Both Macnish and Hall were concerned with aligning human behavior with nature, but each had a different understanding of how that could be done. Prior to the publication of Macnish's book in 1824, only a handful of monographs had been written on the topic, all of them more in the idiom of natural philosophy than medicine or science in the strict senses (Ball 1796; Conover 1791; Ledyard 1782). These were followed by occasional medical articles on sleep and its aberrations, but Macnish was the first to try to systematize sleep and its disorders. By the time Hall was writing about sleep in the 1860s there were a number of monographs dedicated to the subject, although they were less medically focused and more in the idiom of moral tracts.

Macnish was trained as a surgeon at his native University of Glasgow, supported himself mostly as a writer for popular periodicals, and died at the age of thirty-five of typhoid fever contracted during a visit to rural Scotland. His *Philosophy of Sleep* quickly entered a second printing, in which he more thoroughly addressed the then-dominant science of phrenology, and made its way from Scotland, through England, and to the United States, France, and Germany, the latter two in translation. Macnish provided accurate descriptions of what would later become nosologically classified as sleep apnea, sleep paralysis, chronic insomnia, the relationship between depression and insomnia, narcolepsy, and delayed sleep phase syndrome, as well as the parasomnias (especially sleepwalking).<sup>5</sup> Hall, on the other hand, was trained both as a medical doctor and Presbyterian minister at Transylvania University, spent the first part of his life as a preacher, and then moved onto a successful career conducting his own research and as a publisher of health magazines. He moved from his native Kentucky to Texas, to Ohio, and eventually established himself in New York, where he worked as a medical consultant and publisher. He began publishing *Hall's Journal of Health* in 1854, succeeded in 1875 by *Hall's Medical Adviser*, both attempts to make health a public concern and a matter of hygienic practice in the age of industrialization. Whereas Macnish's work depended largely on clinical observation, along with anecdotal information gleaned from a variety of historical and literary texts and medical colleagues, Hall instead relied almost solely on morally infused prescriptive guides. Almost a third of *Sleep*—his review of sleep science and medicine—was reprinted material, authored by himself and others and drawn from religiously-infused hygiene pamphlets.

<sup>5</sup> See Macnish's discussions of sleep paralysis (1824: 143), chronic insomnia (175), the relationship between depression and insomnia (177), narcolepsy (183), delayed sleep phase syndrome (189). A full chapter is dedicated to the parasomnias.

Drawing on the work of Macnish and Hall, I argue that hygiene is a register of practice and thought about what occurs at the level of populations. Hygiene is tacitly and sometimes explicitly aligned with what are accepted as naturally occurring inevitabilities—sleep, defecation, eating, respiration—and their social management. One might also think here of various biological processes that humans undergo throughout their lifetimes, including growth of the body (and such things as hair and fingernails), procreation and pregnancy, aging and death, all of which require broad social management by sanitation agencies, hospitals, schools, elder care, and morgues. Thus, what is commonly accepted as “public health” is about hygiene and the management of populations. Habit, by contrast, corresponds with what is produced as cultural or customary, and is thereby assumed to be easily modifiable in some way. Because of the variability of custom and culture, habit takes as its focus the lives of individuals, promoting ideas of “right living” and best practices (Rosenberg 2003). In the case of culture and custom, one might think of the way the various natural and inevitable processes listed above are dealt with at the level of everyday life, especially habits that relate to eating, drinking, and sleeping (Elias 2000 [1939]; Lefebvre 2002 [1971]); each is impacted by privilege and inequality, and although human physiology carries the potential for each of these processes, this capacity is often impacted by environmental factors. In both habit and hygiene the social and the natural are fundamentally intermixed.

Since hygienic projects work at the level of populations, they might be understood, in part, to take as their end the eradication of environmental factors which positively reinforce the inevitable course of nature (Procacci 1991: 165). While hygienic projects often take whole societies as their object, often in the form of public health campaigns (Armstrong 2002; Arnold 1993; Porter 1999; Rosenberg 1987 [1968]), habits are the object of individual, subject-making efforts. This is not to argue that hygienic movements do not take as their object the habits of individuals, but when they do, they articulate the need for habitual change at the level of whole populations. Examples include the way the cholera epidemics of the nineteenth century were addressed in terms of personal and societal hygiene practices (Rosenberg 1987 [1968]), and the National Sleep Foundation’s recent efforts to “Wak[e] America to the Importance of Sleep.” Many hygienic movements succeed by inculcating habitual practices in individual subjects, combined with broader social efforts regarding the sanitation and control of space and bodies. This was especially so in the case of cholera in the United States in the nineteenth century, the eradication of which depended on instilling the need for personal hygiene in the form of bathing, the purification of water, and the ventilation of domestic spaces, as well as social hygiene in the form of public sanitation works and the quarantining of populations. In sleep medicine in the twentieth and twenty-first centuries, although “sleep hygiene” is often deployed by

medical professionals and pharmaceutical companies to denote a set of bedtime practices, it is more properly construed as habits relating to sleep. Sleep hygiene includes going to bed at a set time, refraining from caffeine, exercise, and alcohol prior to bedtime, and keeping the bedroom free from distractions. The rise of sleep hygiene as an emic analytic in sleep medicine was due to the fusing of the habitual and the hygienic, the individual and the population, against a certain foundation of nature. However, when the foundations of sleep medicine were being laid in the nineteenth century sleep medicine was less certain, and it targeted, differentially, populations and individuals, the control of habits and the need for hygienic projects, all based on presumptions regarding nature and its effects.

Macnish's understanding of sleep was elegant in its simplicity, and represented a dominant and rather mechanical nineteenth-century mode of thinking about sleep. Like many of his peers, Macnish understood sleep to be the result of an internal stimulus, mediated by the environment. His base understanding of sleep was, "We are all kept awake by some mental or bodily stimulus, and when that is removed our wakefulness is at an end" (1824: 19). In the following passage, Macnish aligns sleep with the inescapable effects of nature, but stresses the way it is also subject to "custom" (or culture): "Sleep, being a natural process, takes place in general without any very apparent cause. It becomes, as it were a habit, into which we insensibly fall at stated periods, as we fall into other natural or acquired habits. But it differs from the latter in this, that it cannot in any case be entirely dispensed with, although by custom we may bring ourselves to do with a much smaller portion than we are usually in the practice of indulging in" (1824: 17).

Macnish equates sleeping and its attendant behaviors with "other natural or acquired habits," and in so doing implicitly argues for the modifiability of sleep—or, more profoundly, that culture may override nature.<sup>6</sup> Macnish thereby posits sleep as simultaneously natural and cultural, but meted out through individual lives. He conceives of sleep as something that nature preordains for all life, as he and others knew it—to wit, numerous nineteenth-century treatises on sleep included a section on "vegetable sleep," the periods of rest that plants were understood to have—but it might be altered through the vagaries of culture. Moreover, Macnish posits that natural and "acquired" habits are equal in their efficacy, and that acquired habits are the product of culture, since it is a result of "custom" that sleep is shortened for the benefit of daily activities. At its base, Macnish constructs sleep to be a matter of a biological stimulus, but one that can be modified by human culture—in his reviews of

<sup>6</sup> This is a perennial topic in the anthropological study of the body, as indexed by Marcel Mauss in his lectures on "The Notion of Body Techniques" (1979), in which he discusses cultural and historical variations on such uses of the body as swimming, walking, and sexual technique. He briefly discusses sleeping arrangements.

non-human sleep, sleep is expressly an unavoidable product of nature, which only humans can modify.<sup>7</sup> This combination of an inevitability ascribed to nature and the possibility of its modification through culture, or “customs,” accepts sleep as a *flexible inevitability*: something that can be modified but which has its own temporally impending force. Sleep as a flexible inevitability caught between nature and culture provides the basis for understanding sleep in allopathic science and medicine, but whether the emphasis is placed on the flexible or the inevitable has altered over time. Because sleep has been increasingly shown to be modifiable through pharmaceuticals, as I will discuss in relation to Dement’s work, its nature has become more certain. But for nineteenth-century physicians its uncertain nature necessitated a focus on individual and social customs as a means to discipline sleep.

The flexible inevitability of sleep can be seen in Macnish’s understanding of the biological requirements of human sleep. Although he is not the progenitor of this tradition, Macnish outlines what he perceives to be “normal” sleep in humans, breaking from his forebears by inserting doubt into his claims: “As no general rule can be laid down as to the quantity and quality of labor best adapted to particular temperaments, so neither can it be positively said how many hours of sleep are necessary for the animal frame” (1824: 11). He further explains, “Middle-aged persons who lead an active life, seldom sleep above eight or nine hours in the twenty-four, *however much longer they may lie in bed*; while a rich, lazy, and gormandizing citizen will sleep twelve or thirteen hours at a time” (ibid.: 38, my emphasis). This division between sleep and “rest”—or lying in bed without sleep—is an important one, as Hall will later make clear: it becomes the basis for modifying human sleep during the industrialization of the United States from the 1840s onward. In his conclusion, Macnish reviewed the extant prescriptions on need for sleep: “Jeremy Taylor states that only three hours in the twenty-four should be devoted to sleep. Baxter extends the period to four hours, Wesley to six, Lord Coke and Sir William Hones to seven, and Sir Jon Sinclair to eight. With the latter I am disposed to coincide. Taking the *average of mankind*, we shall come as nearly as possible to the truth when we say that nearly one-third part of life ought to be spent in sleep (ibid.: 279).

Although one might be shocked by the low estimates of Macnish’s predecessors, what is more interesting is the stability of the “average of mankind” that Macnish formulates, an average that remained influential throughout the nineteenth and twentieth centuries, and which, it should be clear, indexes the aggregate understanding of all of “mankind.” For Macnish, despite his reservations regarding the possibility of fixing a biological norm for humanity’s sleep needs, there is an apparently natural average amount of sleep that

<sup>7</sup> See especially his chapter “Sleep of Plants” (1824: 263–66).

humans need, namely, “one-third part of life.” With this mutable inevitability as a threshold against which to structure the science of sleep, Macnish is able to formulate a prescriptive set of habitual principles that complement the natural order of life.

Macnish’s medical prescriptions for healthy sleep were quite simple, and represent a set of guidelines that continued to be employed in only slightly modified form through the twentieth century as the general tenants of “sleep hygiene,” but which for Macnish properly embodied the outline of habits related to “sound sleep”: “An easy mind, a good digestion, and plenty of exercise in the open air, are the grand conducives to sound sleep;—and, accordingly, every man whose repose is indifferent, should endeavor to make them his own as soon as possible. When sleeplessness becomes habitual, the utmost care ought to be taken to overcome the habit, by the removal of every thing that has a tendency to cherish it” (ibid.: 182). In this passage, Macnish opposes two forms of habit, one promoting healthy sleep, and the other insomnia. He later addresses insomnia specifically in relation to “early rising.” The opposition between the behaviors of early and late risers, or larks and owls, is made the subject of moral discourse, as Macnish also makes recourse to the pervasive belief of the beneficial effects of early rising: “There can be no doubt that one of the most admirable conducives to health is early rising.... Napoleon was an early riser; so was Frederick the Great and Charles XII; so is the Duke of Wellington; and so, in truth, is almost every one distinguished for energy and indefatigability of mind” (ibid.: 281). He goes on to explain, “The most striking instances of the good effects of early rising, are to be found in our peasantry and farmers, whose hale complexions, good appetites, and vigorous persons, are evidence of the benefit derived from this custom, conjoined with labor; which the wan, unhealthy countenances and enfeebled frames of those who keep late hours, lie long in bed, and pass the night in dissipation, study, or pleasure, are equally conclusive proofs of the pernicious consequences resulting from an opposite practice” (ibid.: 285). Taken as a set, insomnia is construed as a choice, at least insofar as it is the subject of habitual activity; insomnia is seen to be a problem of the sleepless individual, one produced through the willful disobedience of the nature of sleep. Proper, habitual adherence to the tenants of sleep hygiene will promote sound sleep and personal well-being.

In his discussion of the “General Management of Sleep,” Macnish moves beyond personal habits and outlines the hygienic requirements of proper sleep, including large bedroom spaces, having quality mattresses, and proper sleep posture, and problems with bed-sharing, the negative effects of napping, and the need to entrain children to a schedule of day and night. While these are surely objects of individual efforts, Macnish is equally concerned with the restructuring of everyday life at the level of society, as is made clear in his thoughts about the ordering of proper spaces and times of sleep. In this way,

he moves beyond individual habits to questions of social hygiene, a step that Hall will later extend. Macnish begins by disparaging his reader for the general ignorance of the organization of bedrooms, which he argues “should be always large and airy” as opposed to their being “little better than closets” at present (ibid.: 267). He moves on to the accoutrements of the bedroom itself, specifically the bed, which, “ought to be rather hard. Nothing is more injurious to health than soft beds; they effeminate the individual, render his flesh soft and flabby, and incapacitate him from undergoing any privation” (ibid.: 268). This is followed with even more individualistic prescriptions regarding the proper postures of sleep and the propriety of bed sharing. Regarding the former, Macnish argues, “The posture of the body must be attended to. The head should be tolerably elevated, especially in plethoric subjects; and the position, from the neck downwards, as nearly as possible horizontal.... Lying on the back is also improper, in consequence of its tendency to produce nightmare” (ibid.: 272). As to bed sharing, Macnish foreshadows Hall and others who declare the need for properly ventilated spaces for sleep, and who rely upon moralizing discourses: “It is more wholesome to sleep single, than double, for there is then less destruction of oxygen; and the atmosphere is purer and cooler.... When more than one sleep in a single bed, they should take care to place themselves in such a position as not to breathe in each other’s faces” (ibid.: 273). In Macnish’s move from the construction of bedroom spaces to individual practices of posture and bed sharing, one can perceive the shift from habit to hygiene, from what is constructed as necessarily the object of an individual sleeper’s concerns to the concerns of society more generally, as the sleeper must take others into consideration. The latter became dominant in the 1860s, as is apparent in the work of Hall.

Engaging with the hygienic model of medicine that was developing in the latter half of the nineteenth century, Hall highlights two themes: the need for proper ventilation, and the moral propriety of bed sharing. Regarding the former, he aligns himself with the then-dominant view of the causal effects of impure air (Hannaway 1993), which he summarily employs as the basis for moral, prescriptive discourses regarding cohabitation. Hall here is responding to the contemporary expansion of the family home into a number of rooms, each with individual occupants, formerly (and in large part still) the provenance of the wealthy.<sup>8</sup> His hygienic cosmology is summarized in the following passage:

It is of the utmost consequence that every practical and rational means for securing a pure air for the chamber should be employed, the most important of these being large

<sup>8</sup> Regarding individualization of beds, see Wright’s *Warm & Snug* (2004 [1962]), and Anthony Burgess’s *On Going to Bed* (1982); on the manufacture of homes with rooms dedicated to individual occupants, see Witold Rybczynski’s *City Life* (1995: ch. 8), and Buckminster Fuller’s *Nine Chains to the Moon* (1971 [1963]: chs. 3 and 5).

rooms and single beds.... It is unnatural and degenerative, for one person to pass the night habitually in the same bed or room with another, whatever may be the age, sex, or relationship of the parties ... the atmosphere of any ordinary chamber occupied by more than one sleeper, is speedily vitiated, and that in this vitiated condition, it is breathed over and over again for the space of the eight hours usually passed in sleep (1861: 19).

Not to be undone by the forces of culture, Hall preempts criticism by noting, "It is not denied that two persons have slept together in the same bed for half a century, and have lived in health to a good old age; this only proves how long some may live in spite of a single bad habit" (ibid.: 20). Throughout *Sleep*, Hall takes individual "habit" as his object, under the auspices of a more general hygienic project that takes as its primary concern the reordering of society. In the following passage, he argues for the synergistic force of culture and nature, roughly in agreement with Macnish, suggesting that it is through "regular" rhythms that a natural pattern of sleep might emerge:

A certain amount of sleep rests, renews, and strengthens the whole man, but to accomplish such a result, sleep must be regular ... the general habit should be to retire at the same hour in the early evening of every day. In a short time the result will be an ability to go to sleep within a few moments after retiring, and to sleep continuously until morning, provided the sleeper leaves his bed at the moment he first wakes up, and does not sleep during the day.... Let there be an appointed time, not to be changed for any common reason; the feelings will come at that appointed time, and when satisfied, nature calls for not more until the appointed time comes round again (ibid.: 115–16).

Like Macnish before him, Hall argues for sleep as a flexible inevitability for humans; the problems he perceives are cultural ones, and while nature is perceived to tend toward a state of balance and harmony, it is humanity and society that derails such predispositions. This is clearest in his attacks on "second naps," the practice of returning to sleep after awakening in the middle of the night or early morning.

Second naps, for Hall, are problematic in that they are clearly the choice of humans to override the "appointments" of nature. In his view, nature's resources are balanced; nature is efficient, except when interfered with by human choices. His solutions for overcoming the desire for second naps are wholly through individual habits: "Nature must make the appointment, and will always do it wisely and safely; and *there is only one method of doing it*. Do not sleep a moment in the day, or if essential do not exceed ten minutes, for this will refresh more than if you sleep an hour, or longer. Go to bed at a regular early hour, not later than ten, and get up as soon as you wake of yourself in the morning.... It is not absolutely necessary to get up and dress, but only to avoid a second nap" (ibid.: 185, my emphasis).

Hall provides a later exposition for the need to avoid second naps, particularly as a remedy for nocturnal ejaculations (which he refers to in the following as "exhaustions"). To avoid unwanted or unwilling sexual ejaculation, Hall

argues, one must regularize sleep through habitual practices of waking at appointed sleep times:

Exhaustions occur in the unsound sleep of the later part of the morning, often during the "second nap," as it is called, it may be added that persons who sleep in the daytime, and thus render the sleep of night less deep, are more troubled with these things. By going to sleep at a regular early hour, say not later than ten o'clock, by not sleeping a moment in the daytime, and by being regularly waked up at the end of seven hours, which is about as much as persons usually require, the sleep would, generally, in a week be sound, deep, connected and refreshing.... Nature loves regularity so much she would waken up the body within a few minutes of the times, if only the habit were persistently followed of getting up at the very first moment of waking, or at least, by strong exercise of the will, avoiding a second nap (*ibid.*: 194–95).

In this passage, Hall points to the problematic aspect of habits, namely that they must be "persistently followed"—they are hardly inevitable. Inasmuch as habits may override nature, they have a logic of their own, and depend on the willful practice of individuals. This need to persist in habitual action also demonstrates the irregularity of everyday life, since it depends on the willfulness of individuals who may be unpredictable in their daily practices. Thus, the need for instilling a desire for subjectivity becomes central for those who would order everyday life—it depends, primarily, on the production of perceived social disorders that produce subjects. Hall rallies whatever support he can find for the purpose of altering sleeping habits in relation to the use of time; otherwise, second naps may remain a part of everyday life for those who persist in avoiding his prescriptions.

He carries these concerns to the problem of sharing a bed. Throughout *Sleep*, Hall references scientific explanations for why beds should not be shared, based on such things as the transfer of electricity between bodies, the contamination of air, and the corrupting, vampiric influence of the aged laying with the young. But his ultimate rationalization is grounded in a transcendental, natural order, which, above all, strives toward a fixed rhythm of regularity, moderation, and continuity: "The appetites ... are to be gratified at *stated time*, and at none others; they are not to be teased or tempted or stimulated by always having at hand the facilities for gratification; these occasions being determined at first by the decided calls of nature, which will then be made regularly, moderately, and continuously, to the end of life" (*ibid.*: 119, my emphasis). The problem, of course, is that the calls of nature can be easily interfered with, in convenience and gluttony, but also by culture itself. Hall's use of "stated time" belies nature's abilities to be fully coercive in its determinations. To employ the need for "stated times" is to recognize how dependant nature's rhythms are on culture, on the temporal sense of the everyday that social order provides.

Their similarities are many, but I am interested in a specific difference between Macnish and Hall: Macnish posits "habit" as a foundation for healthy sleep, whereas Hall posits "hygiene." This difference may seem

slight and complementary, but it is more than that when situated within the broader allopathic system that both Macnish and Hall expounded and helped to develop. “Habit,” I argue, drawing on the works of Macnish, is shorthand for the management of social interactions, and is situated in the management of the self. Like Norbert Elias’ “affect-moulding” or Michel Foucault’s “technologies of the self,” “habits” are the ways individuals accept their self-management as a result of changing conceptions of power, agency, and identity (Elias 2000 [1939]; Foucault 1998 [1982]; Rose 1990); the use of “habit” both provides an emic category and lays emphasis on the temporal components of these behaviors (Lefebvre 2004). I propose to distinguish such habitual practices from hygienic projects, which I see as forms of governmentality that try to manage society at the level of populations (Foucault 2000 [1978]); if habit is about temporality and the social, then the hygienic is about space and the natural. In thinking through hygiene, I take Hall’s work—and that of his contemporaries in the hygienic development of medicine and public health during the industrial period—as an attempt to make the biological a matter of public concern, primarily for the purpose of labor (Rabinbach 1990; Thompson 1980 [1963]; 1993). This is not to argue that these domains are distinct: as is clear from the above, the habitual bleeds into the hygienic, and the social into the natural. Rather, making habit and hygiene the foci of diverse practices is to help stabilize the personal and the public, the social and the natural. In the next section, I follow these two projects of human management, individual habits, and social hygiene as they develop in the twentieth century, collapse into one another, and provide the basis for sleep medicine as a means of control, set against a stable, inevitable nature.

#### CERTAIN NATURES

Twentieth-century sleep science and medicine articulated itself from nineteenth-century allopathic understandings of nature and culture, as well as from dominant cultural understandings of sleep, which science and medicine helped to produce and were produced by. Although Macnish and Hall were quite certain in their proscriptions for sound sleep and good health, this certainty was complicated by the possibility of non-consolidated sleep—individuals returning to sleep after waking in the early morning or napping throughout the day. Many arrangements of sleep are possible, as both authors were aware, but they saw consolidated sleep as necessary to the well-being of both individuals and society. Their certainty lay in their understanding of custom and culture as inherently flexible: individuals and populations could be appealed to, to align themselves with the demands of nature, which they might otherwise ignore for the demands not being rigid enough. Nature, in the course of the development of twentieth-century sleep science and medicine, would come to be seen as more certain in its demands, as would the effects of not following its proscriptions. This certainty of nature would allow for the proliferation of

disorders of sleep and the rise of sleep medicine as an allopathic sub-discipline. This demanded the merging of the habitual and the hygienic for the mutual benefit of individuals and society.

The medical understanding of habit and hygiene that structured the science of sleep in the twentieth century was due in no small part to the work of William Dement, who succeeded in establishing the dominant understanding of sleep in the century's second half. To affect this joining of the medical and scientific understandings of sleep, Dement cemented sleep as a natural inevitability more powerful than transitory cultural choices.<sup>9</sup> He worked to limit the possible interpretations of sleep by supplying medical researchers and clinicians with a stable foundation based in nature, upon which the medicine of sleep could operate. This depended in large part upon producing medical certainty about the roles of individual habit and social hygiene in their relation to sleep, a certainty that wedded habit and hygiene into a model of self- and social control. In the process of producing a hegemonic understanding of the sleep that depended on natural, individual processes and social demands, he reified the assumption of the consolidated structure of human sleep. This effectively stunted the reemergence of sleep's other forms as lived practices and also as an alternative model of human biology. Habit and hygiene were united as a means to allay doubt and motivate the program of sleep medicine to control individuals and understand institutions.

Dement, along with Eugene Aserinsky and Nathaniel Kleitman, was largely responsible for the discovery of rapid eye movement (REM) sleep in the mid-1950s and the pursuit of its applications. However, not until the late 1970s, with the nosologic descriptions of sleep apnea and narcolepsy, did sleep medicine congeal as a sub-discipline. Before that, sleep was isolated as a scientific object, not a primarily medical one. Dement, as the main steward of sleep medicine throughout this period, worked to develop a paradigmatic understanding of sleep as a flexible inevitability, albeit—distinguishing himself from nineteenth-century allopathic thinkers—one that was decidedly more inevitable than flexible. It could be controlled through individual habitual practices, but would increasingly be managed with pharmaceuticals. What Dement advocated was a form of medicine that acted as an intermediary between the biological demands of the individual and the expectations and obligations of society, but which focused on the former for the sake of the latter. The persuasiveness of institutions in the shaping of individual biologies was due to the ability of economic interests to make demands on individuals to meet social obligations, especially in the context of work. The temporal and spatial fixity of such social demands, paired

<sup>9</sup> My language is based upon Dement's own drawn from this passage: "If the nightly sleep loss was more substantial, say four hours, it would be impossible for this to happen every night because the homeostatic sleep drive would simply become so strong that sleep is *inevitable*" (1999: 147, my emphasis).

with a unified understanding of the human phenomenon of sleep, gave twentieth-century sleep medicine markers against which to measure individual sleep disorders, while also providing concrete understandings of what normal sleep is. Institutions and individuals were brought together through an understanding that nature's demands affected them equally.

Dement's science and medicine of sleep can be perceived in his critique of contemporary American life and its technological abuses. In this critique, Dement constructs a state of nature from which a fall from grace had occurred: "In virtually every aspect of contemporary living—from electric lights to all-night television to split shifts at work—we are literally punching the clock that maintains the synchronicity of our mind and body. In just a few decades of technological innovation we have managed totally to overthrow our magnificently evolved biological clocks and the complex biorhythms they regulate" (1999: 98). He further claims, "Our loss of sleep time and natural sleep rhythms is the tragic legacy of a single and profound technological advance—the light bulb.... Edison accomplished something Prometheus could not imagine, because he separated the light from the fire and offered it for our infinitely more convenient and *flexible* use" (1999: 99, my emphasis).

Dement is not alone in telling this apocryphal tale: the "state of nature" wherein humans lived in synchronized rhythm with an agrarian nature is a persistent story that numerous actors have employed to legitimate the contemporary temporal regimes of American society.<sup>10</sup> What is different about Dement's understanding of the changes wrought by the advent of cheap electrical lighting is that he sees it as having allowed culture to *temporarily* circumvent nature: the need for sleep and the chronicity of life on Earth is increasingly mediated by the will of the individual who can break from these biological, social, and geological predispositions, but it will inevitably result in "sleep debt" or more severe sleep disorders. Not only are sleep decisions ones that individuals can make, but they are also subject to the whims of societies themselves, as some may choose to extend their days with "split shifts" and "all-night television," and others may not. The flexibility that electric lighting allowed individuals and societies, and the changes in sleep that this generated, disrupted an unwavering natural order, and this explained the rise in sleep disorders in American society.

Throughout *The Promise of Sleep*, Dement makes recourse to what sleep was like previous to the demands of modern life, arguing pointedly, "Once we use electric lights, our [biological] clocks start lagging about an hour every day" (1999: 95). This "phase advance" is understood as a result of the progressive push against human circadian rhythms, which are accepted by sleep researchers to exceed the twenty-four-hour daily clock by upwards of an hour in some experimental settings. The argument is that electric lights allow

<sup>10</sup> A good example of this sort of thinking is Jeremy Rifkin's *Time Wars* (1987).

individuals to lengthen the day, and, as shown by contemporary sleep science, the presence of sustained bright light positively reinforces the biological urge to stay up later each night. Dement can only sustain such views about the lengthening of the day and the destructive effects of electric lighting by suppressing the possibility of non-consolidated sleep, and by ignoring electric light's antecedents that also interfered with biology and natural order. More than did his nineteenth-century predecessors Dement accepts a purification of nature and of society. Echoing Hall on a separate point, he argues, "Most likely we need the sleep debt accumulated during our waking 16 hours, plus a little extra, in order to fall asleep in 5 or 10 minutes and sleep through the night. The idea that a little sleep debt is good is a revolutionary concept" (ibid.: 71). Within such a perspective, the progressive quality of the circadian rhythm becomes necessary for sound sleep, although due to the fixed times for work and school in contemporary American society, the amount of sleep an individual gets in a given night decreases through the week, as one's circadian cues for sleep progress later into the night while the timing of social obligations remain constant. Saturday mornings become a time to make up for a week's worth of diminishing sleep, which process begins again on Monday, resulting again, ideally, in five nights of sound but diminishing sleep throughout the week, rather than five nights of short sleep supplemented by daily naps.<sup>11</sup> Good sleep habits aligned with the hygienic demands of society result in the harnessing of nature's inevitabilities for a sound night's sleep.

The sleeping society that Dement produced was intimately tied to nature, on one hand, but was also capable of making destructive cultural decisions that would expose individuals and societies to nature's wrath. Like Macnish before him, Dement considers this cultural ability to modify sleep as a specific capacity of primates, arguing, "Primates, including man, are able to compress their daily need to sleep into eight hours because they sleep more deeply and much more continuously than if there were no daily period of sustained wakefulness" (1999: 78). Though this might be read as an evolutionary hypothesis regarding humanity's potential for shaping their temporal regimes both at the individual and social levels, Dement pays little attention to the potential relationships between sleep disorders and evolution. This is peculiar in that he understands humanity as innately linked with its environment, noting, "It is Earth itself that must act as a metronome, a timekeeper setting the tempo

<sup>11</sup> Dement calls this "Saturday Syndrome": "Many people work long, hard hours through the week, hoping to catch up on sleep over the weekend. They may collapse into bed on Friday night and sleep deeply until late in the morning. Even though they've paid back several hours of sleep debt, they walk around like zombies all day Saturday, barely able to stay awake in front of a televised ball game or at the dinner table. One reason is obvious: You can't pay back a week's accumulated sleep debt in one night. The other, less apparent, reason for weekend fatigue is that the stressful arousal of the weekday workplace is no longer masking sleep debt" (Dement and Vaughan 1999: 230).

of our days. The bright light of morning and its dimming at dusk must synchronize our clocks each day, calling us awake and lulling us to sleep” (ibid.: 92).

Within this model—in which the Earth produces humanity’s rhythms of sleep but there is the possibility of altering these rhythms through choice—sleep disorders can be understood as both biological aberrations and social decisions, as both pathologies and disorders. This is precisely what Dement attempts to curtail in the second half of *The Promise of Sleep*, a voluminous study of the various sleep disorders wherein he works to delimit the various understandings of sleep disorders into unitary nosologic (but differentiated) phenomena based upon a betrayal of nature. He understands the many sleep disorders—insomnia, restless legs syndrome, narcolepsy, sleep apnea, delayed sleep phase syndrome, etcetera—as all resting upon a biological foundation of eight quiet, motionless, and consolidated hours of sleep, positioned at an environmentally and socially conditioned time (between sunset and sunrise), but potentially disrupted by individual choices or social conditions. He explains both insomnia and delayed sleep phase syndrome as resulting from cultural or individual choices, the former often caused by anxiety or depression, the latter by choices to retire to bed late. In the case of the sleep disorders with recognized biological causes—narcolepsy, sleep apnea, and restless legs syndrome—the cessation of each depends upon novel medical treatments that act upon nature. Bad habits result in individual disorders, and pathological biologies can be treated through the pharmaceutical management of nature.

Each of these disorders had been previously described by Macnish and others, who understood them to be modifiable through individual habits. The work of *The Promise of Sleep* was to lay a new clinical and scientific foundation for the sleeping public that relied entirely on a model of nature and human biology from which all variations were pathological disorders, individual variances from a social order that found its logics in an inevitable natural order. That is to say, the habitual and the hygienic were brought together in such a fashion that individual biologies were the responsibility of individuals, not society; the nature of society provided the inevitable foundation to which individual biologies had to be aligned. Rather than the stable, industrial, and geological understanding of sleep that Hall advanced, Dement and his followers ascribed to a modular premise, namely that individuals had to attune themselves to the ever-shifting demands of contemporary American social life through self-management, aided by medical treatments, to produce desired forms of sleep.

Take, for example, Dement’s discussion of the utility of sleeping pills:

A colleague of mine surveyed attitudes toward sleeping pills in 1990<sup>12</sup> and found that the number-one reason people avoided these medications was that they considered

<sup>12</sup> *The Promise of Sleep* contains no citations, so we cannot know which colleague or which study, or its sample size. However, this is largely beside the point, which is that the “sinful” appraisal gives Dement an opening to state his own views.

them “sinful.” Yet it seems to me that taking sleeping pills to get good sleep—even for extended periods—is inherently no more sinful than taking daily doses of heart medication or an antidepressant, such as Prozac. If a nonaddictive sleeping pill that does not induce tolerance and has very few side effects is the only way that someone can get good sleep and feel fully awake during the day, there is nothing “sinful” in taking it. These medications can save lives and are justifiable if their benefits outweigh their risks (Dement and Vaughan 1999: 163).

Whatever the cause of an individual’s sleeplessness, medications can provide them with the means of aligning their circadian rhythms and sleeping times with those necessitated by society. The risk/benefit analysis with which Dement ends this passage (and ends this section of his chapter) is necessarily vague: What benefits need to be weighed against which risks? Who conducts this analysis—the physician, the patient, the patient’s family, or employer? Dement does not address these questions. What remains is the understanding that nature can be controlled, and that chemical interventions can ensure alignment of individuals with the sleep demands established by nature and society. The inevitability of nature provides a certainty for use in the clinic: the order of society and the order of individuals can be ensured through the medical management of nature.

#### CLINICAL CERTAINTY, DOUBT AND CONTROL

I now return to the clinical practice of sleep medicine, focusing this time on the reporting and treatment of a specific case. Dement’s fixing of nature as the basis for understanding individual and population-level arrangements of sleep facilitated the spread of sleep medicine, but it failed to provide so certain a basis that clinicians would always interpret the same set of symptoms as being of the same nosologic category. At the MSDC, one of the most frequently debated disorders was Rapid Eye Movement Behavioral Disorder, commonly referred to as RBD. RBD is one of the most, if not the most severe of sleep disorders, involving violent dream enactment behavior, often including attacks upon inanimate objects and bed partners; stress-inducing and violent dream imagery is often reported by RBD sufferers and accompanies these behavioral outbursts (Schenck 2005). RBD is also rare, with generous estimates that less than 1 percent of people suffer from it, and all verified cases have been in men over fifty. While most sleepers are paralyzed during REM sleep precisely so that they do not enact their dreams, RBD sufferers are not—they act out their dreams due to a failure to lose muscle tone during sleep. Clonazepam produces this loss of muscle tone pharmaceutically and works to treat about 90 percent of RBD sufferers, and has the side benefit of also curtailing violent dreaming. Because Clonazepam is an anticonvulsant, it affects bodies differently than sleep-inducing pharmaceuticals do. If a patient is misdiagnosed as having RBD, this treatment can make their disordered sleep worse, and such patients often continue to seek out medical help. This can be seen in the case of a patient

referred to MSDC for treatment for his RBD, who had failed to respond to Clonazepam. The doubts in the diagnosis, and the eventual certainty of the attending physicians, display the problems that Dement's fusing of habit and hygiene has caused for the understanding of sleep's nature.

Dr. Banner, a research fellow who came to the clinic in my second year, presented the case of a twenty-seven-year-old man referred by two different labs that he had visited, both of which had diagnosed his condition as RBD. The man had a delayed sleep phase—he was usually unable to go to sleep until 1:00 or 2:00 a.m.—and had to wake up at 5 a.m. for his job as a construction worker. He suffered from sleepwalking, and usually ambulated around his house. This was combined, Banner said, with the patient “voiding” himself on the couch, other peoples' beds, and throughout the house. The patient reported that as a child both his father and stepfather had beat him for this behavior. He had recently married without having explained the extent of his problems to his new wife; at the time of his visit to the clinic their “marriage [was] on the ropes” and his wife was also sleep deprived because she would awaken when the patient did and followed him around to make sure he did not hurt himself or their four-year-old son. He also threatened his wife when he was sleepwalking, and they had been referred to marriage counseling even though when awake he was polite and generous toward her. He was placed on Ambien for his sleep phase delay, but this had resulted in sleep-related eating behaviors (especially eating handfuls of peanut butter). He had also developed sleep-related sexual behaviors, often groping his wife in his sleep, which unsettled and angered her.

Richards suggested the man might have a psychogenic dissociative disorder due to the history of abuse. Dr. Pym asked if it might be something that could normalize itself, if they let the man sleep in for two weeks to see what happened. Pym cited what seemed a clear dysynchrony between the man's biology and his social life, and added that changing a person's biological clock to meet their social obligations was never completely successful. Richards replied that they did not have the luxury of allowing the man “free run” with the disorder—though his health might improve, he would lose his job. The clinicians were certain that the patient was not suffering from RBD, but rather from a cluster of other symptoms that had been misdiagnosed.

Whatever doubts these clinicians and researchers might have had about the nature of sleep, they had nosological certainty, which had its roots in the control brought to sleep medicine by Dement's determination of sleep's nature. Whatever the ontological basis of sleep medicine, the concretization of nosological categories, as well as of known treatments to provide certain outcomes, provide clinicians with a basis for their therapeutic conduct. Medical professionals may misinterpret symptoms and associate them with inappropriate syndromes, but this is the fault of the clinician, not the category. In this case, the patient was misdiagnosed with RBD because the attending physicians failed to understand the diagnosis and its inapplicability to a man of his age. That he

continued to move through the medical system, always recognized as having a sleeping problem, was due in no small part to the success of Dement's formulation of sleep medicine. At previous moments in the history of American medicine and psychiatry this patient might have been recognized as having entirely different kinds of issues, ranging from deep-seated psychological trauma, to mood disorders, to alcoholism, to, as one of the clinicians suggested, a "psychogenic dissociative disorder." But a disorder of sleep had been recognized as the problem, and it was now a matter of discerning which sleep problem was the cause; no one questioned the certainty of that general diagnosis. This case exhibits how individual sleeping habits and the need for social order, both in the family and the workplace, are brought together to treat sleep disorders. The certainty of sleep medicine provides the means for control, but it also entails the concretization of sleep's nature to the extent that questions will be raised and doubt will persist.

Researchers and physicians throughout the twentieth century and into the twenty-first have not divorced sleep from "culture" (or "cultures"); they perceive it as entwined with cultural expectations of "normal" sleep, its consolidated social ordering, and its grounding in nature. This understanding laid the foundation for both the production of biological norms and pathologies and the practice of sleep medicine to cure non-normative sleep patterns. The model of consolidated sleep served as a foundation for hygienic understandings of sleep—what "natural" human sleep is, and how sleep can be harnessed for the production of everyday life's social rhythms at the level of populations—and as a basis for curtailing the "bad" habits of patients and other interested sleepers. "Natural" sleep was established as being a continuous eight hours through the night, and nature was understood to provide an inevitable rhythm, variance from which led to the punishment of pathological sleep and its medicalization. These assumptions resulted in two certainties: First, sleep science and medicine would be protected from pervasive doubts, and would have a stable basis from which pathologies of sleep could be conceived, diagnosed, and treated. If doubt was clinically deployed, it was not targeted at individual nosologic categories, but rather at the foundations of sleep science and medicine. This might mean a dramatic re-imagining of the nature of sleep, but the clinical practice of sleep medicine would remain intact. Second, the subjectivity of sleep—how Americans understood it—would be limited to accepted forms; variations from these would index the need for medical treatment.

The model of consolidated sleep is not the only possibility, and other forms of sleep permeate sleep science in subtle ways. They may one day lead to a broadening of dominant understandings of human biology and its potentials, unfettered by the demands of contemporary temporal regimes that find their logic in an inexorable nature of sleep. These possibilities for other sleeps attenuate the concept of sleep's flexible inevitability: sleep is a fact of terrestrial life, but how and when it happens is open to alternatives.

If Americans come to see sleep as more flexible than inevitable, and make that a foundation for new sleep practices, it could force a transformation of the temporal regimes that currently structure American social institutions. Such a new social and biological order would also loosen the hold that medical professionals and pharmaceutical companies have over the treatment of sleep disorders. Science will not solve the puzzle of sleep by asserting universal truths about it. Only by understanding the many alternative forms of sleep and society—its varied “local biologies” (Lock 1993)—can scientists, physicians, and sleepers allay their doubts and understand the multivalent nature of human biology and its interactions with culture and society.

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