

## Rescaling the Patient: The Diagnosis of Sleep-Related Problems in the Sleep Laboratory

Zifonun, Dariuš; Reinhardt, Svenja; Weste, Sebastian

Veröffentlichungsversion / Published Version

Zeitschriftenartikel / journal article

Zur Verfügung gestellt in Kooperation mit / provided in cooperation with:

GESIS - Leibniz-Institut für Sozialwissenschaften

### Empfohlene Zitierung / Suggested Citation:

Zifonun, D., Reinhardt, S., & Weste, S. (2023). Rescaling the Patient: The Diagnosis of Sleep-Related Problems in the Sleep Laboratory. *Historical Social Research*, 48(2), 41-62. <https://doi.org/10.12759/hsr.48.2023.15>

### Nutzungsbedingungen:

Dieser Text wird unter einer CC BY Lizenz (Namensnennung) zur Verfügung gestellt. Nähere Auskünfte zu den CC-Lizenzen finden Sie hier:

<https://creativecommons.org/licenses/by/4.0/deed.de>

### Terms of use:

This document is made available under a CC BY Licence (Attribution). For more information see:

<https://creativecommons.org/licenses/by/4.0>

---

# Rescaling the Patient. The Diagnosis of Sleep-Related Problems in the Sleep Laboratory

Dariusz Zifonun, Svenja Reinhardt & Sebastian Weste\*

---

**Abstract:** »Den Patienten reskalieren. Zur Diagnose schlafbezogener Probleme im Schlaflabor«. The sleep laboratory has become the key site for the study and clinical diagnosis of sleep disorders, with polysomnography (PSG) being the analytical procedure of choice. In this article we argue that, first, during the overall process of being diagnosed at the sleep laboratory, a constant “doing patient” takes place. Second, we show how a constant “re-scaling” of the patient is performed. The patient shifts on a scale between personhood and a physical body, but without ever fully achieving either of these states. The art of successfully performing and creating the patient role collaboratively is precisely one of carefully navigating between these poles and rescaling the patient. With this in mind, we claim that the “body” and the “person” are not just constitutive and predefined entities, but processual units of construction through ongoing interactions. The rescaling of the patient is bound temporally to the (mini-)phases of the overall process of being diagnosed at the sleep laboratory and spatially to various settings within it. This rescaling also differs socially regarding interaction with the complementary roles of the hospital personnel. Even in situations that appear to reduce patients to bodily objects, there are strategies used that maintain the ascription of personhood, shield them against the impact of the loss of being a person, and facilitate the re-transformation of bodies into persons.

**Keywords:** Sleep laboratory, polysomnography (PSG), obstructive sleep apnea (OSA), diagnosis, doing patient, body, bodification, person, rescaling.

---

## 1. Introduction

---

The sleep laboratory has today become the key site for medical study and clinical diagnosis of, as well as therapy for, sleep disorders – with video-based

---

\* Dariusz Zifonun, University of Marburg, Institut für Soziologie, Ketzlerbach 11, D-35037 Marburg, Germany; [zifonun@uni-marburg.de](mailto:zifonun@uni-marburg.de). ORCID iD: 0000-0003-3758-2203.  
Svenja Reinhardt, University of Marburg, Institut für Soziologie, Ketzlerbach 11, D-35037 Marburg, Germany; [svenja.reinhardt@uni-marburg.de](mailto:svenja.reinhardt@uni-marburg.de). ORCID iD: 0000-0001-9012-686X.  
Sebastian Weste, University of Marburg, Institut für Soziologie, Ketzlerbach 11, D-35037 Marburg, Germany; [weste@students.uni-marburg.de](mailto:weste@students.uni-marburg.de). ORCID iD: 0009-0004-4303-3248.

cardiorespiratory polysomnography (PSG) being the main analytical procedure. In this contribution, we are concerned with the role the patient plays in sleep laboratories. Our analytical interest in the patient role resulted from observations we made as we were pursuing a quite different research question. What initially brought us to the sleep laboratory was our interest in the ways in which the diagnostic process at the laboratory results in a supposedly *finite product*: sound, reliable, unambiguous scientific knowledge about the sleep of patients. We then realized that this process was not driven by similarly finite, stable, or self-contained actors – doctors, nurses, technicians, bureaucrats, patients and their relatives, etc. – but was marked by the continuous production of a *moving target* that was as much in flux as the knowledge of sleep: the patient. While we focus analytically on the patient, our perspective is interactionist, i.e., we regard the *patient* as the product of situated encounters between those present in the laboratory – encounters that involve the “full spatial environment” of their co-present situation (Goffman 1963, 18).

We argue (1.) that during the overall process of being diagnosed at the sleep laboratory, a constant “doing patient” takes place. Since “doing is being” (Goffman 1961, 77, 88), “doing patient” refers to the practices involved in achieving and maintaining the membership of an individual in a social formation (see West and Fenstermaker 1995; Hirschauer 2021). Generally speaking, “doing patient” has numerous dimensions: the patient role is categorically ascribed (when hospital personnel open a file or case) and claimed by a status holder (as the “patient”). Being a patient is a relational affiliation achieved in interaction with other status holders and with those holding complementary statuses. While “doing being sick” can become an encompassing “identity,” patient membership is a role affiliation, i.e., it is bound to the medical system and its “role others” (Goffman 1961, 75) – and in the case of the hospitalized patient, the role is tied to the medical organization. The sick role which is accepted within society includes the role-taker’s display of their will to get better and to cooperate with helpers (Parsons 1951, 437). At closer inspection, it becomes apparent (2.) that while “doing patient,” the individual goes through numerous transformations, as the typical arc of work (Strauss et al. 1985) around PSG is carried out by various occupational teams and consists of several (mini-)phases (Strauss et al. 1985). During these phases, a constant “rescaling” of the patient takes place. The patient shifts on a scale between being a person and being a body,<sup>1</sup> but without ever fully achieving either of these states. Thus, if we assume a

---

<sup>1</sup> Even when the phrasing used here has a notable parallel to the philosophical distinction between “having a body” (*Leib*) and “being a body” (*Körper*) (Plessner 2019 [1975]), we seek in our theoretical approach to preclude a constitutive perspective on a body or a person. In this respect, we want to argue here that “being a body” does not run alongside interactive processes as a constitutive condition but is itself part of an interactive production.

linear scale between the person on the left and the body on the right, the patient cannot become solely a body “to the right” or, on the other hand, a person “to the left” – the patient cannot be awarded whole person status. The art of successfully doing the patient role collaboratively is precisely that of carefully navigating between these poles and rescaling the patient. On the one hand, the patient can never be fully a person, as the patient role is ultimately marked by the ascription of the “incapacity to function normally” (Parsons 1951, 443). This is the basis for “exemption from normal social role responsibilities” (ibid., 436), whereas taking these responsibilities is linked to “*esteem* as [a] more diffuse social recognition of the whole person” (Zick-Varul 2010, 76, emphasis in original). While the patient seeks help and is obliged to cooperate in being helped, they grant “access to the body” (Parsons 1951, 451) to the physician and other personnel. On the other hand, though, the patient can also never be fully transformed into *just* a body, i.e., pure materiality that can be manipulated at the will of others. This is not merely because of the “life world esteem” (Hirschauer 1991, 279) granted to human bodies and the (universal) “‘inviolability’ of the body” (Parsons 1951, 451) as, more specifically, “access to the body” is limited to what is legitimately necessary for helping the patient. Thereby “consent” is an ongoing achievement that needs to be maintained interactionally. This drastically limits the degree and severity of what is, in a dramatic coinage, sometimes referred to as “bodification.”<sup>2</sup> Taken together, a constant precarious personification takes place in the patient role.

In this article, we draw on data from a larger ongoing (video-)ethnographic study of the production of sleep knowledge in sleep laboratories at university hospitals. The core data we use here is drawn from participant observation and autoethnography in a study conducted by Svenja Reinhardt and Sebastian Weste, respectively, and was collected in 2021/22. The overall corpus also includes interviews and documents from three German and Swiss sleep laboratories and explorative data from sleep laboratories in Japan. Inasmuch as this is an ethnographic study, we make no claim that our findings are typical of all sleep laboratories. We do however claim that we have identified one type of sleep patient produced at sleep laboratories. In the following, we outline the various (mini-)phases involved in an in-hospital diagnosis with PSG and zoom in on key phases to work out the practices involved in transforming the patient while in parallel bringing forth the patient’s physicality and personhood.<sup>3</sup> During the (mini-)phases of the diagnostic procedure, the fabrication, maintenance, and transformation of the patient is the result of interactive negotiation, competent use of technological

---

<sup>2</sup> We treat bodification as a matter of degree (a lower or higher degree of relevance of the body) that is linked to personification (a lower or higher degree of relevance of the person).

<sup>3</sup> See Julia Vorhölter’s contribution (2023, in this issue) for an account of the affects brought forth at the sleep laboratory and the impact they have on the production of sleep knowledge.

devices, and multiple kinds of medical work (Strauss et al. 1985). We show that even during procedures that appear to reduce patients to bodily objects, there are strategies used that maintain the ascription of minimal personhood. These strategies shield the patient against the impact of the loss of personhood and facilitate the re-transformation of bodies into patient-type persons we call *sick persons* here. Ultimately, the diagnostic process is governed by the logic of returning the (chronically) ill to “a relatively normal pattern of physiological functioning” (Parsons 1978, 19) that will allow the patient to return to being an individual able to competently perform their responsibilities while being ascribed full personhood.

---

## 2. Seeking Care in a Sleep Laboratory

---

An individual seeking medical care normally presents one or a set of corporal sensations to a physician or any other medical personnel, claiming to be sick and having symptoms that need medical attention. As being sick is generally understood as an undesirable state, getting well (or at least better) is hoped for. This forms the basis for becoming a patient. Therefore, the sick “must seek to gain control of certain conditions normally beyond the range of voluntary action through resort to outside therapeutic agency, through self-care, or simply ‘letting’ the *vis medicatrix* operate” (Parsons 1978, 70). Those symptoms – which underlie the self-definition of being sick – are then presented to the medical staff. As per the “institutional definition of the sick role the sick person is helpless and therefore in need of help” (Parsons 1951, 440), these medical personnel – especially the physician – represent the counterpart to the patients’ role and potentially enable the sick person to fully enter the role of the patient with all its rights and duties. If the symptom(s) are evaluated as relevant during medical interactions – mostly between physician and patient – follow-up procedures such as PSG can be initiated by the medical professionals. The assignment of relevance needs to be performed mainly by the physician and leads to a transformation of the sick person seeking medical care into a patient, as corporal sensations are then transferred into medical terms – such as “symptoms” – to gain relevance.

To enter a sleep laboratory as a patient, a person needs a medical referral from an authorized physician and must undergo the first transformation from person to patient via being understood as presenting symptoms. Most patients will receive a referral from a general practitioner who attributes the symptoms within the patient’s description or pre-diagnosis to a sleep-related problem. A “language of the body, not the person” (Saake 2018, 323)<sup>4</sup> seems

---

<sup>4</sup> German original: „eine Sprache des Körpers, nicht der Person“ (Saake 2018, 323; translated by the authors).

to be characteristic of this medical consultation as a focus on the symptom(s) expressed within the body rather than the person can be noted. These symptoms – mostly dated within a first polygraphy (PG) – entitling the patient to sleep-related medical care can include daytime sleepiness, problems in falling asleep or sleeping through the night, sleeping too much, sleep deprivation, or fatigue. Once the symptoms presented by the patient are labeled as relevant by the physician, a provisional diagnosis can be made. This authorizes the patient to seek sleep-related medical care in an out-patient clinic. The suspected diagnosis will then be discussed in a first conversation between a physician specifically trained in sleep medicine and the patient. The most common sleep-related disorder is so-called “obstructive sleep apnea” (OSA). OSAs occur when the muscles in a patient’s throat slacken during sleep, leading to a short-term blockage of the trachea. Cut-off values regarding “normal,” “mild,” or “severe” degrees of OSAs are then applied to pathologize the patient’s breathing during sleep. OSAs can often already be identified during PG, but the severity is mostly assessable only within a PSG.

## 2.1 Preparing for the Night: Admissions and Wiring

It is standard procedure in sleep laboratories to investigate patients’ symptoms using PSG. PSG is a multiparametric screening procedure combining the monitoring of a sleeping body via video recordings with biological signals such as eye movements (EOG), brain activity (EEG), heart rhythms (ECG), and respiratory functions. It is used to examine the patient’s body to confirm or discard the initial preliminary diagnosis. The most important (mini-)phases in the typical arc of work around PSGs are: admission of the patient, anamnesis, wiring, bio-calibration of the recording devices, night recording, removal of the wiring, analysis of the recordings, ward rounds, and hospital discharge. After briefly presenting these (mini-)phases, we focus on the bio-calibration of the recording devices as a key phase in the transformation of the patient.

To fulfill the patient role in a sleep laboratory, the sick person needs to be accepted as such within the bureaucratic system of the sleep laboratory. Admission to the sleep laboratory is divided into two mini-phases: first, the engagement of a person with patient management in bureaucratic admission into the sleep laboratory system and, second, admission to nursing. On the one hand, bureaucratic admission focuses on organizational tasks such as updating the patient’s address and phone number, preparing a sick note, and organizing patient transport for hospital discharge. On the other hand, the nursing admission includes questions about food preferences, care degree, allergies, the medication regime, and the incidence of falls. It can be seen here that during bureaucratic admission, the individual and their specific

circumstances regarding their job, the healthcare provider, and transport for returning home after the hospital stay are taken into consideration, whereas nursing admission focuses on the patient role and their stay within the hospital. Together, these two components of the admissions process represent a transition in which the sick individual is transformed into a patient while facilitating the role transition. Medical personnel are now ready to treat the admitted sick person as a patient (as opposed, e.g., to entry as a visitor or colleague) and the sick individual is prepared for the provision of their body – something they would be reluctant to do in everyday life. In practical terms, admission involves appointments in mid-morning with an administrative staff member as well as a nurse, the completion of documents by both parties, and the signing of a treatment contract. In summary, successfully and cooperatively transforming into patient role-taking is accomplished by obtaining a record with up-to-date demographic data (case number, name and address, date of registration, etc.) that link the patient to the person and the physical data (age, weight, medical history, etc.) to identify the patient as a bodily being and establish questions of health as topics for further interaction. One could even understand this as a first transformation into a digital body or a test run of the “bodification” that will occur later. Subsequently, the assuming of the patient role is complete, and the patient can be accommodated in a patient room.<sup>5</sup>

The first contact with a physician in the role of a patient in the sleep laboratory is the anamnesis, during which the patient’s medical history is evaluated interactionally with the physician, while sleep-related symptoms are distinguished from corporal sensations that are not considered relevant (for the sleep medical evaluation). As several patients are cared for in one ward, the physician will have to fulfill several tasks, including the anamnesis, in a set amount of time. While acting as a patient, it is characteristic to be constantly available to the medical staff and the physician to facilitate their task management. Here, the physician’s challenge is to prep and in parallel balance the patient’s personhood and body for the entire stay in the sleep lab. Soon after admission, the patient will be served lunch in their room. Medical personnel can potentially enter the room to perform tasks while the patient is eating. Although patients are asked about their food preferences at nursing admission, the first lunch is preordered before arrival and consists mostly of a piece of meat and some vegetables. The decision regarding what to prepare for the patient seems to be based on the average patient and not on trying to find something that many people would eat – such as a meatless or lactose-free option. This can lead to needing to prepare a packaged soup, provide some leftover bread from breakfast, or give the patient time to go out and

---

<sup>5</sup> In sleep laboratories, these are single rooms so as not to disturb other patients’ sleep recordings. Family members or accompanying assistants are tolerated only in rare and exceptional cases such as visiting times or if a patient is severely disabled or a child.

grab something from a store or restaurant nearby, if the patient will not eat the lunch because of allergies, dietary restrictions, or food preferences. Here, the patient's individuality is institutionally not admitted, but exceptions like those already mentioned commonly make up for such prohibitions. Practices associated with eating at the sleep lab are oriented towards maintaining the patient role: set eating times, limited choice of dishes, no self-cooking, no eating in bed if physically possible, etc.; all of these features indicate the limited autonomy of the patient – who is neither a self-supporter (as at home) nor a customer (as in a restaurant) – and needs help in an overall state of limited personhood.

In summary, the patient experiences limited temporal, spatial, social, and nutritional autonomy. While bureaucratic admission links patient and body, nursing admission provides a “pre-scaling” of the patient. Eating routines, like lunch, that recur during the patient's stay are performed in ways that highlight the importance of eating to maintain the proper functioning of the patient's body while downplaying the role eating can play as a means for expressing subjective indulgence and personal taste. Meanwhile, “deference rituals” (Goffman 1967b, 57) are being performed by medical personnel to keep the patient within the symbolic realm of a sick person. The patient is thereby scaled as more than a body but as less than a whole person.

One of the mini-phases that potentially disturbs the patient in their room is the abovementioned anamnesis performed by the physician. The primary aim of this procedure is to reconcile the patient's current situation with documents in their file and thus to enable a suspected diagnosis-related medical admission. During anamnesis, what is already known about the patient's state of health, as well as biographical or demographic data beyond the situation, and what could be classified as possibly relevant, is queried. Topics discussed here may include other existing illnesses, the patient's occupation, and the procedure in the ward. Here, the patient is framed as a sick person, not as whole person; i.e., only those of their individual characteristics that are relevant to their suspected diagnoses are made relevant in the answer-question dialogues with the physician. Most of the time, the physician establishes a specific framework within which the patient can pose questions, but topics that do not pertain directly to sleep-related issues are commonly not discussed or are quickly dismissed by the physician. It seems questionable whether it is functionally necessary to carry out this renewed anamnesis. Nevertheless, it appears to be important for both the physician and the patient as a means of reinforcing each other's respective roles. Even though most patients do not discontinue their stays abruptly at this stage, patients who believe they are not adequately cared for tend to abandon sleep-medical care later on. This means that both the patient and the physician are needed to continually (re-)produce their complementary roles and that both roles must be accepted and fulfilled to maintain the



respective “other” role situationally.<sup>6</sup> This interaction represents a further initiation into the medical field, for which a physician seems to be needed as a medical expert.

Within this process of anamnesis, the individual can now completely transition into patient status and metaphorically hand over their body to the physician as the latter fulfills their role as a medical professional. For the physician, it is additionally a matter of having the patient and their sleep made available as an object of investigation. For this, they need knowledge of symptoms or corporal sensations understood as relevant regarding their concept of sleep (Knorr Cetina 1992). Within this first physician-patient talk in the sleep laboratory, it seems to be important that physicians engage with patients communicatively to motivate the latter to participate and to continue their sleep-related medical supervision. This might to a certain extent thwart the findings of Saake, who argues that physicians “do not see specific patients in front of them so much as they see specific bodies that have to be treated, and to which people are attached, so to speak” (Saake 2018, 318).<sup>7</sup>

After eating a dinner that was selected from a range of three or four meals with the help of nurses, the patient is asked to change into sleepwear to prepare mentally and physically to be wired up and connected to a set of PSG devices in the evening. Wiring up is carried out either by nurses, a special wiring shift, or the night shift (consisting mostly of medical or physics students and/or nurses) and in a specific room or while the patient is sitting on the bed in their assigned room. The wiring mini-phase includes attaching several electrodes, sensors, and straps to the patient. These procedures can thereby be differentiated on a smaller scale based on the PSG hardware that is used, but the devices are mainly very similar. During the wiring process, medical personnel work closely on the patient’s body, as various sensors are attached to specific places on the face, head, and body, sometimes even underneath the sleepwear. Patients often try to be helpful, e.g., by raising their arm at the right moment or turning to facilitate the process to enable personnel to reach certain body parts. Given the unusually close arrangement between strangers, both the patient and the medical personnel involve themselves in the working process. The tension raised by this close proximity is often resolved interactively by maintaining the working situation

---

<sup>6</sup> At the beginning of the COVID-19 pandemic, telemedicine for the diagnosis and prescription of PAP devices for sleep apnea therapy was used as most sleep laboratories were closed and/or single rooms were used for patients suffering from COVID-19. For telemedicine, the patient was given a device to take home that would record the patient’s sleep, much like what is used in sleep laboratories. Following that, another device was used to automatically adjust various pressures in PAP therapy according to the patient’s needs. This approach was discontinued shortly after, however, as most patients did not feel sufficiently taken care of given the lack of personal care by a physician, interrupting their treatment.

<sup>7</sup> German original: “Eigentlich sehen Ärzte gar nicht so sehr konkrete Personen vor sich, sondern konkrete Körper, die behandelt werden müssen, und an denen dann auch noch Personen sozusagen dranhängen“ (Saake 2018, 318; translated by the authors).

and finding reassurance in the medical setting. Therefore, a nurse can protect the patient's personhood by simply addressing the patient's body. For example, they can speak very loudly while moving in a very rapid but controlled manner to create a somewhat public situation which seems to be almost impersonal. This facilitates moving closer to the patient's body without becoming unpleasant or treating the person in a questionable way. But the medical personnel are not alone in maintaining the situation, as an extract from a field protocol shows, where the ethnographer was wired-up by a nurse for the sake of a study:

On the one hand, I am doing my best to be nice and open, so that she is able to come closer without hesitation. On the other hand, I also keep her at distance by trying not to stare at her. Somehow, I am finding myself avoiding eye contact. Last but not least, I am trying to create a certain normality due to the design of communication. So to say, if I am behaving like this situation is a common one for me, then the situation does not seem extraordinary, painful or unpleasant or even intimate for me.

By their manner of speaking, moving, and participating, the patient and the nurse are scaling the patient repeatedly between personhood and body to prevent an intimidating situation and to maintain the situational frame of a professional working on a patient's body. Managing the interactional scaling could be exhausting, preventing efficiency or the fulfillment of the task as a whole. Therefore, this problem of intimacy can also be solved by the spatial arrangement.<sup>8</sup> Most of the wiring is performed from above or behind the back of the seated patient's body, which on the one hand limits effective cooperation between staff member and patient, leading to irritation at unexpected touches or sounds, thereby making the patient's body relevant beyond what is necessary for diagnostic reasons. On the other hand, wiring up from behind the back or from above helps to prevent eye contact (which could lead to a feeling of intimacy or emotional closeness) and other forms of more direct interaction, and thus contributes to shielding the patient from becoming a mere physical object through avoiding mis-performed or misleading intimate encounters. When wiring takes place in the wiring room, two patients will often be wired up at the same time. A screen placed between patients will then prevent mutual observability while enabling medical staff to chat among themselves while performing medical work on the respective patients' bodies. The patients then face a wall while the medical staff wire them up from behind, mostly completely out of the patients' sight, even though they are sometimes prepared verbally for what will happen to them. But it seems also to be quite common to not address the patient at all, if they are not asked to help with certain movements, etc. This spatial arrangement

---

<sup>8</sup> See Vorhölter (2023, in this issue) for a different (emphatic, reflexive, discursive) approach to managing affects produced in the intimacy of wiring up.

can also be understood as creating an overall public situation while working on the patient's body.

A patient's offer to help signifies their readiness to cooperate and emphasizes the patient role. The rejection of such offers by medical staff underlines the asymmetry between patient and personnel and further emphasizes the patient's dependence on being helped and their need to "hand over" their body to the staff members. During the mini-phase, "bodification" is clearly stronger than during anamnesis, when "bodification" is carried out solely verbally. On the one hand, the medical staff try to counterbalance physical "bodification" communicatively. On the other hand, casual communication between staff members might be interpreted as disregarding communication that momentarily turns the patient into a "nonperson."<sup>9</sup>

## 2.2 Before the Night: Bio-Calibration of the PSG Devices

Following the wiring procedure, medical personnel will carry out bio-calibration, a phase in the arc of work around PSG at which the technological hardware (especially electrodes and biosensors) previously attached to the patient are checked for functionality.<sup>10</sup> Bio-calibration is usually also the point at which the audio and video recording of the patient starts – even though in some sleep laboratories patients are disconnected from the main line completely once again and transmission pauses. Depending on the laboratory, various teams of people are responsible for carrying out the bio-calibration, based on the available or planned personnel and their level of experience. In most cases, a member of the night, late, or wiring shift will carry out this procedure. The metric parameters, which are controlled during this phase, ensure the accuracy, quality, and functionality of the nocturnal recordings.

The wired and instrumentalized patient is prepared for bio-calibration in their room. The calibration needs to be performed before the patient falls asleep. For this purpose, cables that for the patient's convenience may not yet have been finally attached are plugged in. These devices, such as the cap for pulse oximetry, which is usually attached to the index finger of the non-dominant hand, or the nasal cannula for measuring respiratory flow, are

---

<sup>9</sup> Goffman's "nonpersons" as opposed to "full persons" (Goffman 1963, 40) are individuals who are "treated in their presence as if they were not there" (Goffman 1959, 152). Taxi drivers, technicians, servants, and "the sick" (ibid.) are typical roles of nonpersons. As nonpersons are dealt with as if they did not carry a self, they are open to "subordination and disrespect." Goffman also emphasizes, however, that a nonperson role can be used "as a defense" (ibid.) against demands that stem from the "full spatial environments" of encounters.

<sup>10</sup> While the technical term "calibration" refers to determining the accuracy of a device by comparing it with a standardized measurement device, medical staff at the observed sleep labs used "bio-calibration" when they tested whether or not electrodes, biosensors, wires, and devices work properly.

expected to be more troublesome. The wiring is also connected to the measuring devices in the room. The patient is then asked to lie down in their bed to be worked on, which can cause a “bodified” feeling, as this excerpt of a field protocol shows:

Carefully I slid from the edge of the bed to its centre and lay my head down. I noticed that I could not see my body anymore. It somehow felt like I was exposing my body.

We argue that bio-calibration does more than prepare the patient technically for night sleep. It also elicits “bodification,” providing the means for managing the body and thus preparing the patient for their nightly “bodification.” Later, during measurement, the patient gives up control of the body as is typical during sleep. They relax any socially habitualized bodily positioning or tension and situate the body in the measurement situation. The patient thus runs the risk of becoming a bare body, not secured by the privacy of their private bedroom. Thus, regarding personhood, being asleep is the most precarious situation in the sleep laboratory. During bio-calibration, the patient gets a sense of the nightly laboratory situation and the ways in which “bodification” will then be managed. Bio-calibration interactively and ceremonially establishes (1.) the patient’s spatial isolation and (2.) the transformation of the patient’s physical body into a digital body as a means of securing personhood.

(1.) As opposed to all previous phases, bio-calibration introduces a clear spatial distance between the patient’s body and the medical staff. A walkie-talkie is placed on the patient’s bedside table. The patient then is told to lie down on their bed and the staff members leave the room while announcing that they can be contacted via the walkie-talkie. A staff member then walks to the so-called control room and prepares the programs used for measurement at a designated computer. While carrying out the calibration, the medical staff roughly follow a “from top to bottom” procedure, beginning with eye movements and ending with leg movements. Subsequently, a rest measurement is performed with open as well as closed eyes, followed by measurement during eye movements. Instructions are given via the walkie-talkie. The medical staff will observe the graphs and numerical values on their screens to see whether the patient’s bodily movements are recognizable. This is followed by activation of the chin muscles by chewing or crunching movements and the testing of both the snoring sensor by humming or imitating snoring sounds and the respiratory channels by nasal and mouth breathing as well as holding one’s breath. Finally, the movement sensors on the legs are tested by moving the toes or the feet. The patient is constantly called on to collaborate with medical staff members during these procedures. In addition to being given instructions, patients are also informed about the next step in testing. The successful execution of the individual test measures is repeatedly described by lab personnel with adjectives such as “beautiful,”

“good,” or “wonderful” before moving on to the next step. While these interactions are functional in securing the success of the bio-calibration,<sup>11</sup> they also involve a certain degree of ceremonial attention to the patient. Questions regarding the patient’s situational physical well-being are posed by the personnel, for example addressing whether the wiring is comfortable enough. On the other hand, a constant flow of explanations or even excuses would produce “too much person” and prevent proper role behavior. During bio-calibration, the “fabrication” of the individual’s body and its alignment with the technology rely on the patient’s collaboration and consensus, which makes motivation via “personification” a functional necessity.

(2.) During bio-calibration, a “digital bodification” of the patient is performed. At closer inspection it becomes clear that it is not really the physical body that is being handed over to the medical personnel but its digital correlate. Not only is the body of the patient physically removed from all others, but by engaging in the bio-calibration of the sleep measurement technology, the patient learns that the staff are not interested in their body but in the bio-signals their body gives off. The patient participates in the process that transforms their body from the physical entity of their everyday life to the digital entity of sleep knowledge. The combination of physical separation and digital transformation ensures the patient that their physical body will be protected during the process of measurement at night. Additionally, as the patient experiences the process it becomes clear that the technology does not take direct control over of their body but instead plays a mediative role. The interactional bio-calibration process can be understood as a ritualized handover of the metrics. This handing over then symbolizes the protection of the patient’s body. The patient is being reassured that staff and technology will take care of their body without disturbing its integrity. An agreement is established between patient and medical staff that the data transferred via the wires from the physical to the digital body are handed over for observation as part of the overall process of producing sleep knowledge for the sake of helping the patient. As we show here, the practices involved in bio-calibration shine a light on the way in which the integrity of the patient’s personhood will be secured while being asleep.

When bio-calibration is successfully completed and the wiring is considered sufficient, the patient can be understood as fully instrumentalized (Wagner 1995) but not fully “bodified.” After the bio-calibration has successfully ended, staff members offer to temporarily remove the nasal cannula and the pulse oximetry cap from the patient’s body if they do not want to sleep immediately. Giving the patient a choice and expressing a willingness to defer to their preference to remain awake gradually reduces

---

<sup>11</sup> Cf. Webb et al. 2013 for an analysis of the interactive practices that secure cooperation during optometry consultations.

the level of instrumentalization again and dignifies the patient and the body that takes them through everyday life.

### 2.3 At Night: Recording Sleeping and Waking States

The patient is asked to sleep in the evening, preferably before 11 pm. The transition from the waking to the sleeping state (e.g., where reading or watching TV is a transitory activity) is left to a large extent to the patient, even though the patient is counted on to indicate the beginning of sleep with a “lights off” signal. Therefore, the patient is asked to signalize when they are trying to sleep, which indicates the existence of a norm associated with falling asleep: it is preferred that the patient not fall asleep inadvertently (e.g., while using a smartphone or reading), but instead they must give a signal that at a specific time they are switching off the light and are trying to go to sleep. If the time comes that the patient wants to go to sleep and switches off the light, they are assisted in reattaching the previously removed nasal cannula and pulse oximetry device. This sometimes affects the sleep-time recording, as some patients fall asleep before the sleep recording is officially started by the “lights off” signal.

With all PSG devices correctly attached, the patient can be evaluated and monitored by reference to the data retrieved from their body, permanently depicting the processes within the patient’s body through the intercepted biophysical signals. The signals – as well as the patient’s body – are monitored throughout the night via visualization in graphs, numbers, and the video (sometimes even the audio) recording of the sleeping body. Additionally, the software will depict some automatic evaluation such as sleep stages. Those evaluations are very vague and, according to medical personnel, not sufficient for a useful assessment of the patient’s sleep. While the patient is asleep, their body is the focus of a medical procedure that is automated, mechanized, and quantified: the body is used to produce graphs, numbers, and diagrams that enable staff to look “inside” it. The patient’s personhood is reduced, as it is during sleep, as a standardized procedure is carried out with their body that links the body to technology and the medical knowledge built into the technological devices, while body and person are isolated from each other. The body is treated as the producer of the epistemic object (Rheinberger 2014, 194) that needs to be approached: the individual’s sleep.

Sleep is hereby understood as an arrangement of specific biophysical signals that can be used to produce data to gain insight into processes taking place within the body. In everyday life, the monitoring and “usage” of the sleeping body are highly unusual. The high regard for the patient’s personhood can be identified precisely from the special protection they receive during sleep. Inasmuch as the incapacitated state of being asleep is regarded as necessary for regaining the capacity for fulfilling role

expectations, the sleeping nonperson is, paradoxically speaking, shielded against the loss of personhood. Medical staff at the sleep laboratory try to simulate this shielding by treating the sleeping patient as if they were not a patient. They try to minimize the disturbing of the patient's sleep by not entering the patient's room and by leaving the monitoring of the patient to the technological devices. Additionally, they shield the "bodification" of the patient from them, as we have noted already. They do this not only for the sake of producing "good data" but also because symbolically it underlines the "inviolability of the body." The technology takes over this mediating function as a means of intercepting the body without disturbing it by its presence. The bare body is protected here by being transformed into a dimensional embodiment, thus providing the personnel with a digital body that can be observed without affecting the integrity of the person.

Difficulties arise as patients wake up quite often, leave their room to smoke a cigarette, go to the bathroom, or even do not sleep at all for long periods of time. This reintroduction of the person status is quite problematic for the night measurements because they cannot be easily performed in one piece, and the patient's initiated body status is interrupted repeatedly by their personhood. In PSG, as in other medical procedures (Webb et al. 2013), the testing produces data that is regarded as reliable and robust only if the patient can be encouraged to participate in the PSG through sleeping. As the focus in PSG monitoring is on the sleeping body but not the person, the testing is disturbed if the patient is still awake. The recording – and the patient's sleep – must – given regulations of insurance companies – consist of at least six hours of sleep. This can be – as already mentioned – difficult to achieve by patients and even lead to a failed or insufficient recording according to the lab or the responsible insurance company. If this regulation is not met, insurance companies may decide not to pay for the PSG and a physician can potentially not diagnose any disorders according to set standards.

While the patient is awake, they are mostly addressed by their name. This is not the case when the patient is asleep. During the night, in interaction between various medical staff, the patient will be addressed mostly by a room number or a diagnosis, seemingly as a bodily object. But even then, when the "bodification" of the patient reaches its peak, medical staff follow standards of professionalism and etiquette is maintained; e.g., the sleeping patient is not mocked but treated respectfully and in a caring fashion.

In the early morning – starting around 5 am – the sleeping body is no longer needed and the patient can be wakened. As the data derived from the patient's body is not only monitored in real time but also saved for further analysis on the computer in the form of a digital body, it is – as a first step in the de-wiring phase – saved before switching off the devices. After waking up the patient at a specified time – if they are not already awake – the de-wiring starts. The technical devices are then removed from the patient's body by the night shift

staff. Most patients remain very sleepy and sometimes even doze off while having the electrodes removed. During the de-wiring process, a short conversation is initiated by the night shift staff, and the patient is asked how they slept. Casual interaction goes along with small talk, which serves as means for attributing personhood. At the same time, it is instrumental insofar as the information obtained will go at least in part into the patient's record and inform the medical evaluation of the patient's sleep. After the removal of the devices and the de-wiring, the patient is allowed, if they so desire, to sleep again without being monitored, as the sleeping body is no longer being tested but the patient's well-being is in focus. Additionally, breakfast is provided to the patient to meet their physical needs. This breakfast is chosen by the patient the day before from a limited menu and consists mostly of bread or rolls with cheese, cold meats, or spreads as well as tea or coffee.

#### 2.4 After the Night: Scoring, Diagnosis, Ward Rounds, and Hospital Discharge

While the patient sleeps again or is having their breakfast, a medical-technical assistant (MTA) launches the analysis mini-phase. Analysis is sometimes carried out automatically by the programs. The automated scoring is however typically overwritten by a visual evaluation carried out by an MTA. The MTAs analyze the data in three rounds: first, they evaluate the patient's sleep stages. Then, second, relevant breathing-related issues such as obstructive sleep apneas (OSAs) or leg movements are marked and categorized. To categorize the OSAs as pathological, the previous scoring of the sleep stages is necessary, as only breathing issues that emerge during sleep are considered to be relevant. Patients in the sleep laboratory often have trouble sleeping, so phases in which they are awake occur quite often and accordingly are not scored apart from being noted as being waking phases. Similarly, in a third round of analysis, leg movements are scored only selectively: if they occur at the end of an OSA incident, they will be addressed as an arousal of the body, not as pathological. Additionally, only leg movements in certain sleep stages are categorized as "not normal" and therefore pathological. With this scoring, diseases such as restless-leg syndrome can be diagnosed. Based on the scoring of the biophysical signals, the program calculates and processes these categorizations into a combination of numerical values, graphs, and diagrams: the PSG report usually consists of three standard pages and is used by the physician to diagnose the patient and to further evaluate treatment options. This first evaluation of the data, while simultaneously diagnosing the patient, is conducted without speaking to the patient, based only on the PSG report.

Following the diagnosis of the patient and the evaluation of possible treatment options by the physician, the PSG report and its results are



addressed in another physician-patient talk that is marked by the physician's authority (Saake 2018, 315-8). The talk has been prepared by the physician under enlistment of the evaluation, the statements made by the patient in the morning, and their medical history. The patient is being confronted with medical knowledge about their body's state of health that offers a possible explanation of their previous corporal sensations, which were first transformed into general symptoms and now made explainable within a certain pathology. In the physician-patient talk, the hard copy of the PSG report is used as a somewhat objective depiction of the biophysical signals of the patient's body while sleeping. If the symptoms are deemed relevant and severe enough by the physician, the PSG report and diagnosis are used to convince the patient of the necessity of undergoing therapy and to evaluate treatment options which could potentially work for the patient. Here, two factors are brought into consideration. First, the necessity of treating the symptoms, as they cause psychological or physical strain for the patient, potentially leading to other illnesses or symptoms such as diabetes or high blood pressure in the future. Additionally, the symptoms need to be considered by the physician as worth treating, as the psychological strain must be great enough to justify a possibly uncomfortable therapy. In this talk, the physician largely structures the conversation and often starts by asking the patient again how they slept. Then, they present the findings of the PSG, sometimes cross-referencing the patient's new or written statements. Here, a transformation of corporal sensations of the patient into a medical diagnosis that involves considering seemingly more objective symptoms, numbers, graphs, and a comparison with statistical calculations takes place. The physician sums up the process with a diagnosis and often recommends PAP therapy as a treatment option.<sup>12</sup> Afterwards, the conversation is opened up again and the patient is asked about their own assessment or whether anything remains unclear.

On the one hand, the asymmetry between doctor and patient as it is performed in this situation is similar to the asymmetrical role relations that are characteristic of other medical fields, as it has been carved out as a structural problem by, e.g., Höfling and Lang (1999, 17). Additionally, especially when medical professionals use multiple instrumental-technical devices, the asymmetry is understood as even more present (cf. an overview by Siegrist 1998). On the other hand, this relationship touches on the dual character of the patient as a body as well as a person, as discussed with regard to anamnesis. Even more than in most other phases of the diagnostic process at the sleep laboratory, the patient's body cannot be fully detached from the

---

<sup>12</sup> Positive airway pressure (PAP) therapy is a group of therapeutical options for specific kinds of sleep apnea. They have in common that a device compresses air into the user's throat via a mask attached to the nose and/or the mouth to keep the airways open during apnea occurrences.

person during the diagnostic doctor-patient talk: “Obviously, even after the anamnesis, when the diagnosis is clear, the physician cannot simply treat the body; he must take into account the patient himself” (Saake 2018, 320).<sup>13</sup> As sleep-related medical conditions are not always taken seriously by patients, tests such as PSGs take a lot of effort or time, and the patient’s psychological strain has to be severe enough to accept treatment, the relationship between physicians and patients seems to be – from time to time – less asymmetrical than in other medical fields.

Depending on the previously set number of nights the patient will stay in the sleep laboratory, they will be discharged from the hospital immediately after the diagnosis or after a second, third, or fourth night. Those additional nights are regularly used – at least in the case of OSAs – to initiate and/or adjust a therapy using a PAP device.

---

### 3. Conclusions

---

In this paper we have analyzed a peculiar type of social membership: being a patient in a sleep laboratory. To theorize this membership, we have drawn on three sources. (1.) Parson’s (1951) structural functionalist perspective on medical practice provides an analytical starting point by dismantling institutionalized expectations of the “sick role,” i.e., exemption from normal social role responsibilities. Here the patient must seek help and cooperate in being helped and grant access to their body to medical staff. To Parsons, the role of the medical practitioner and the sick role are elements of the social structure of the medical system, which itself is a sub-system of the broader social system. From this perspective, the sick role appears to be a functional necessity within the medical system and is consequently portrayed as highly stable. Furthermore, it appears as if the organizational membership role the patient plays has to be simply “taken” by any sick person entering a medical institution like the hospital or the sleep laboratory. (2.) Considering interactionist theory, however, one can conclude that things might not be so easy. Instead, roles are being interactively produced, and becoming a patient involves “making” the patient role (Goffman 1961, 113). Accordingly, we have analyzed “doing patient” as an ongoing accomplishment during the stay at the sleep laboratory. (3.) Still, even the interactionist elaboration of role theory offers a rather narrow conceptual framework for analyzing social affiliations at the sleep laboratory. The practice- turn in micro-sociology (Hirschauer 2016) offers an approach to understanding the fluidity of membership, its

---

<sup>13</sup> German Original: „Offenbar kann der Arzt auch nach der Anamnese, wenn die Diagnose klar ist, nicht einfach nur den Körper behandeln; er muss den Patienten selbst mit einkalkulieren“ (Saake 2018, 320).

gradational nature, and the importance of material and technological “infrastructures” as well as physical and symbolic dimensions.

Bringing together these three perspectives and elaborating our theoretical argument, we are inclined to conclude that modern society poses a motivational problem: individuals are forced to take on a multiplicity of functional roles, fulfill generalized role expectations, perform standardized acts of behavior, and engage in anonymous social relations. This raises the question why individuals should engage in functional roles if they experience social life as “not about me” and realize they are merely regarded as replaceable status holders. The interaction order in our setting offers a solution to this problem of motivation in the sleep laboratory by providing resources for granting *personhood* to interactants. On the one hand, the entire system of “deference rituals” (Goffman 1967b, 57) is an interactive tool with which individuals turn each other into “sacred objects” (Goffman 1967a, 31): the physician opens up the conversation, greets the patient, and asks some questions that the patient answers. On the other hand, “role distance” (Goffman 1961) is the means by which interactants present their selves; e.g., the nurse wearing a colorful name tag – instead of the one provided by the hospital – showing those present that they are not just “another medical professional” but a unique individual with personal tastes. More generally, in functionally differentiated societies, the *person* serves as the symbolic totality across all functional roles that individuals occupy. By treating each other as persons, interactants attest to each other that they are unique, autonomous, and self-reliant individuals with physical and mental integrity.

Such acts granting personhood are however performed only as long as individuals carry out “normal social role responsibilities” (Parsons 1951, 436). If they show deviant behavior – e.g., if they beg for money instead of working, steal instead of buying, laugh at a funeral instead of showing grief, etc. – personhood is not granted. The sick individual is a special kind of deviant. Because the sick individual is not deemed responsible for their deviance, it is ultimately marked by the ascription of the “incapacity to function normally” (Parsons 1951, 443). According to Parsons, this serves, as noted above, as basis for “exemption from normal social role responsibilities” (Parsons 1951, 436). As our data show, however, the sick individual who is “doing being a *patient*” is not granted full personhood. Instead of being deemed a “whole” person they are a *sick person*. In the sleep laboratory, deference rituals are therefore performed asymmetrically, as the patient’s physical integrity is questioned and their autonomy is restricted. In doing being a patient, the individual demonstrates a willingness to cooperate and improve their health – e.g., by helping in being wired and in bio-calibration. Subsequently, it is interactively maintained that an individual in the patient role works on the restoration of the normal ability to fulfill role expectations and, eventually, the integrity of the whole person is restored. This objective is pursued by working out a

diagnosis and therapy to improve the symptoms produced by the patient's body.

Thus, the patient – following Parsons (1951, 1978) – is given temporary or – in the case of the chronically ill – partial status as deviant but willing to improve. In return, they are treated as “not merely another patient” presenting “typical” symptoms and receiving “standard” treatment but are given a fitting solution to their personal problems. Interaction is geared towards the individual sick person, preventing the patient from feeling as though they are regarded as the carrier of a dysfunctional body that has to be restored to a socially functional status. Contrary to how Parsons (1951) describes the role of the patient in the US medical system in the 1950s, Glaser and Strauss (1974 [1968]) in the 1960s or as Siegrist (1978) summarizes it regarding hospitals in German-speaking countries, today's patient role at the observed German sleep laboratory differs significantly. For example: much more work is carried out by medical staff to maintain the patient's personhood as a way of motivating the patient to fulfill their role. Contradicting or disagreeing with the physician or having done one's own research concerning possible diagnoses or treatment options is far more common than it was just a few years ago, as Zillien (2016) has shown. “Doing patient” and producing the sick person is additionally worked out in relation to their digital body and the link between body and technology, as the patient's own corporal sensations need to be aligned with their processual data. Two factors need to be intertwined over the course of the entire process through which a patient is diagnosed at the sleep laboratory: on the one hand, the institution's medical personnel with the help of which this improvement is supposed to occur; on the other hand, the patient who is oriented towards being able to live up to previous role expectations again after diagnosis and therapy and to reinstate the symbolic figure of the person handling the symptom-producing body. The symbolic connection between the individual patient (role) and the sick person protects the patient in the institutional interaction from being *only a body*.

Hirschauer has claimed that in surgery “the patient is reduced to a body” (Hirschauer 1991, 288). He shows, however, that even in the operating theatre a “person-like status” is maintained and hospital staff employ practices designed to maintain the “remainder of the patient's person” (Hirschauer 1991, 305). Following Hirschauer, we argue that the symptom-bearing body is protected from “*depersonalization*” in the asymmetrical setting of the sleep laboratory. The person status is maintained (at least marginally) in the form of the sick person, but the whole person can emerge from it again.

Thus, interactively in the sleep laboratory, the sick person is prevented from becoming a whole person or a whole body by a process in which the patient's cooperation is demanded continuously and they are reminded repeatedly of their need of help and assistance. The physician is highly

relevant in framing the hospital stay, as only through their performance in anamnesis, ward rounds, or the hospital discharge phase does the stay in the hospital seem justifiable to the patient and others. This is the case, as the physician's (co-)presence is needed to maintain the patient's status and to enable the fulfillment of the patient role. Whereas physicians and nurses shift the scale towards the person, wiring and the night shift work in the opposite direction. While it might be argued that in sleep medicine "abstract knowledge can be generated from a body or applied to a body" (Wolf-Meyer 2008, 99) and an image of an *abstract body* within allopathic medicine is promoted, modern "biopolitics" (Wolf-Meyer 2008, 97) cannot help but pay tribute to the person. That this seems to be necessary can, e.g., be seen in the work of Zarhin (2015). She was able to reconstruct that through medicalization that occurs on both macroscale and microscale levels, OSA patients tend to be skeptical of the diagnosis. Accordingly, the patient's display of autonomy during a stay is the necessary mechanism that leads to (voluntary or forced) withdrawal from the institution, *undoing* the patient and regaining full personhood again. The rescaling of the patient between person and body is – to summarize our findings – bound *temporally* to the (mini-)phases of the overall process of being diagnosed at the sleep laboratory and *spatially* to various settings within the laboratory. Such rescaling also differs *socially* with regard to interaction with complementary roles (Saake 2018, 321).

---

## References

---

- Glaser, Barney G., and Anselm L. Strauss. 1974 [1968]. *Time for Dying*. Chicago: Aldine.
- Goffman, Erving. 1959. *The Presentation of Self in Everyday Life*. Garden City.
- Goffman, Erving, ed. 1961. Role Distance. In *Encounters: Two Studies in the Sociology of Interaction*, 73-134. Harmondsworth: Penguin University Books.
- Goffman, Erving. 1963. *Behavior in Public Places. Notes on the Social Organization of Gatherings*. New York: The Free Press.
- Goffman, Erving, ed. 1967a. On Face-Work. In *Interaction Ritual: Essays on Face-to-Face Behavior*, 5-45. New York: Routledge.
- Goffman, Erving, ed. 1967b. The Nature of Deference and Demeanor. In *Interaction Ritual: Essays on Face-to-Face Behavior*, 47-95. New York: Routledge.
- Hirschauer, Stefan. 1991. The Manufacture of Bodies in Surgery. *Social Studies of Science* 21 (2): 279-319. doi: [10.1177/030631291021002005](https://doi.org/10.1177/030631291021002005).
- Hirschauer, Stefan. 2016. Verhalten, Handeln, Interagieren: Zu den mikrosoziologischen Grundlagen der Praxistheorie. In *Praxistheorie: Ein soziologisches Forschungsprogramm*, ed. Hilmar Schäfer, 45-67, Bielefeld: transcript Verlag.
- Hirschauer, Stefan. 2021. Un/Doing Differences. The Contingency of Social Affiliations. In *Diversity and Otherness: Transcultural Insights into Norms*,

- Practices, Negotiations*, ed. Lisa Gaupp and Giulia Pelillo-Herstermeyer, 62-95. Berlin: de Gruyter.
- Höfling, Wolfram, and Heinrich Lang. 1999. Das Selbstbestimmungsrecht: Normativer Bezugspunkt im Arzt-Patienten-Verhältnis. In *Neopaternalistische Medizin. Der Mythos der Selbstbestimmung im Arzt-Patienten-Verhältnis*, ed. Günter Feuerstein and Ellen Kuhlmann, 17-26. Bern, Göttingen, Toronto, Seattle: Huber.
- Knorr Cetina, Karin. 1992. The couch, the cathedral and the laboratory: On the relationship between experiment and laboratory in science. In *Science as Practice and Culture*, ed. Andrew Pickering, 113-38. Chicago: University of Chicago Press.
- Parsons, Talcott, ed. 1951. Social Structure and Dynamic Process: The Case of Modern Medical Practice. In *The Social System: The Major Exposition of the Author's Conceptual Scheme for the Analysis of the Dynamics of the Social System*, 428-79. New York: Free Press.
- Parsons, Talcott, ed. 1978. Health and Disease: A Sociological and Action Perspective. In *Action theory and the human condition*, 66-81. New York, London: Free Press.
- Plessner, Helmuth. 2019 [1975]. *Levels of Organic Life and the Human: An Introduction to Philosophical Anthropology*. Translated by Millay Hyatt. New York: Fordham University Press.
- Rheinberger, Hans-Jörg. 2014. Epistemische Dinge. In *Handbuch Materielle Kultur: Bedeutungen, Konzepte, Disziplinen*, ed. Stefanie Samida, Manfred Eggert, and Hans Peter Hahn, 193-7. Stuttgart: Springer.
- Saake, Irmhild. 2018. Die Dominanz des Arztes. In *Ärztliche Tätigkeit im 21. Jahrhundert: Profession oder Dienstleistung*, ed. Sebastian Klinke and Martina Kadmon, 311-31. Berlin: Springer.
- Siegrist, Johannes. 1978. *Arbeit und Interaktion im Krankenhaus: Vergleichende medizinsoziologische Untersuchungen in Akutkrankenhäusern*. Stuttgart: Enke.
- Siegrist, Johannes. 1998. Arzt-Patienten-Beziehung 1. In *Lexikon der Bioethik 1*, ed. Wilhelm Korff, Ludwin Beck, and Paul Mikat, 238-42. Gütersloh: Gütersloher Verlagshaus.
- Strauss, Anselm, Shizuko Fagerhaugh, Barbara Suczek, and Carolyn Wiener. 1985. *Social organization of medical work*. London: Transaction Publishers.
- Vorhölter, Julia. 2023. Sleeping with Strangers – Techno-Intimacies and Side-Affects in a German Sleep Lab. *Historical Social Research* 48 (2): 23-40. doi: [10.12759/hsr.48.2023.14](https://doi.org/10.12759/hsr.48.2023.14).
- Wagner, Gerald. 1995. Die Modernisierung Der modernen Medizin: Die „epistemologische Krise“ der Intensivmedizin als ein Beispiel reflexiver Verwissenschaftlichung. *Soziale Welt* 46 (3): 266-81. <http://www.jstor.org/stable/40878108> (Accessed 23 March 2023).
- Webb, Helena, Christian Heath, Dirk vom Lehn, and William Gibson. 2013. Engendering Response: Professional Gesture and the Assessment of Eyesight in Optometry Consultations. *Symbolic Interaction* 36 (2): 137-58. doi: [10.1002/symb.55](https://doi.org/10.1002/symb.55).
- West, Candace, and Sarah Fenstermaker. 1995. Doing Difference. *Gender and Society* 9 (1): 8-37. <http://www.jstor.org/stable/189596> (Accessed 23 March 2023).
- Wolf-Meyer, Matthew. 2008. Sleep, signification and the abstract body of allopathic medicine. *Body and Society* 14 (4): 93-114. doi: [10.1177/1357034X08096897](https://doi.org/10.1177/1357034X08096897).

- Zarhin, Dana. 2015. Contesting medicalisation, doubting the diagnosis: Patients' ambivalence towards the diagnosis of Obstructive Sleep Apnoea. *Sociology of Health and Illness* 37 (5): 715-30. doi: [10.1111/1467-9566.12229](https://doi.org/10.1111/1467-9566.12229).
- Zick-Varul, Matthias. 2010. Talcott Parsons, the Sick Role and Chronic Illness. *Body & Society* 16 (2): 72-94. doi: [10.1177/1357034X10364766](https://doi.org/10.1177/1357034X10364766).
- Zillien, Nicole. 2016. Expertenwissen in eigener Sache: Objektivierungsmechanismen als Glaubwürdigkeitsgeneratoren. In *Wissensforschung – Forschungswissen. Beiträge und Debatten zum 1. Sektionskongress der Wissenssoziologie*, ed. Jürgen Raab and Reiner Keller, 263-70. Weinheim Basel: Beltz Verlag.

All articles published in HSR Special Issue 47 (2022) 4:  
Sleep, Knowledge, Technology

Introduction

Hannah Ahlheim, Dariuš Zifonun & Nicole Zillien  
Sleep, Knowledge, Technology. An Introduction.  
doi: [10.12759/hsr.48.2023.13](https://doi.org/10.12759/hsr.48.2023.13)

Contributions

Julia Vorhölder  
Sleeping with Strangers – Techno-Intimacies and Side-Affects in a German Sleep Lab.  
doi: [10.12759/hsr.48.2023.14](https://doi.org/10.12759/hsr.48.2023.14)

Dariuš Zifonun, Svenja Reinhardt & Sebastian Weste  
Rescaling the Patient. The Diagnosis of Sleep-Related Problems in the Sleep Laboratory.  
doi: [10.12759/hsr.48.2023.15](https://doi.org/10.12759/hsr.48.2023.15)

Hannah Ahlheim & Jonathan Holst  
“Masters” of Time. Chrono-Biologizing Sleep in the 20th Century.  
doi: [10.12759/hsr.48.2023.16](https://doi.org/10.12759/hsr.48.2023.16)

Julie Sascia Mewes  
Matters of Sleep. Sleep Timing Devices Towards a “Sleep of Any Time.”.  
doi: [10.12759/hsr.48.2023.17](https://doi.org/10.12759/hsr.48.2023.17)

Mina Lunzer  
Sleep as Movement/Sleep as Stillness. Colliding “Objects” at the Scientific Exhibition *Dreamstage* (1977).  
doi: [10.12759/hsr.48.2023.18](https://doi.org/10.12759/hsr.48.2023.18)

Ben Lyall and Bjørn Nansen  
Redefining Rest: A Taxonomy of Contemporary Digital Sleep Technologies.  
doi: [10.12759/hsr.48.2023.19](https://doi.org/10.12759/hsr.48.2023.19)

Nicole Zillien, Nico Wettmann & Frederik Peper  
Sleep Experiments. Knowledge Production through Self-Tracking.  
doi: [10.12759/hsr.48.2023.20](https://doi.org/10.12759/hsr.48.2023.20)

Diletta De Cristofaro & Simona Chiodo  
Quantified Sleep: Self-Tracking Technologies and the Reshaping of 21st-Century Subjectivity.  
doi: [10.12759/hsr.48.2023.21](https://doi.org/10.12759/hsr.48.2023.21)

Christine Hine, Robert Meadows & Gary Pritchard  
The Interactional Uses of Evidenced Sleep: An Exploration of Online Depictions of Sleep Tracking Data.  
doi: [10.12759/hsr.48.2023.22](https://doi.org/10.12759/hsr.48.2023.22)