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## Uncovering everyday rhythms and patterns: food tracking and new forms of visibility and temporality in health care

Minna RUCKENSTEIN  
*University of Helsinki*

**Abstract.** This chapter demonstrates how ethnographically-oriented research on emergent technologies, in this case self-tracking technologies, adds to Techno-Anthropology's aims of understanding techno-engagements and solving problems that deal with human-technology relations within and beyond health informatics. Everyday techno-relations have been a long-standing research interest in anthropology, underlining the necessity of empirical engagement with the ways in which people and technologies co-construct their daily conditions. By focusing on the uses of a food tracking application, MealLogger, designed for photographing meals and visualizing eating rhythms to share with health care professionals, the chapter details how personal data streams support and challenge health care practices. The interviewed professionals, from doctors to

nutritionists, have used food tracking for treating patients with eating disorders, weight problems, and mental health issues. In general terms, self-tracking advances the practices of visually and temporally documenting, retrieving, communicating, and understanding physical and mental processes and, by doing so, it offers a new kind of visual mediation. The professionals point out how a visual food journal opens a window onto everyday life, bypassing customary ways of seeing and treating patients, thereby highlighting how self-tracking practices can aid in escaping the clinical gaze by promoting a new kind of communication through visualization and narration. Health care professionals are also, however, acutely aware of the barriers to adopting self-tracking practices as part of existing patient care. The health care system is neither used to, nor comfortable with, personal data that originates outside the system; it is not seen as evidence and its institutional position remains insecure.

**Keywords.** ethnography, visibility, enacting care, everyday rhythms, food tracking

## **Introduction**

In recent years, self-tracking has become an expanding field of technology development, encouraging the measuring of various kinds of bodily and mental functions, including everyday movements, physical activity, and body weight. This chapter demonstrates how ethnographic research supports Techno-Anthropology by exploring and working with the detailed ways in which technologies participate in and promote new kinds of social,

material, and emotional encounters. In the more action-oriented and design-oriented applications of Techno-Anthropology that aim to promote favorable changes in health care, ethnographic research offers a good grounding for understanding what is required for successful implementation of self-tracking practices [1]. Furthermore, this kind of perspective underlines the indivisibility of human and nonhuman agents and forces in care work by demonstrating, for instance, how personal data streams, data visualizations, and communication concerning the data become an active part of care processes alongside health care workers and patients [2]. Thus in order to share methodological recommendations with current and future practitioners in Techno-Anthropology, the chapter outlines how an ethnographically-oriented approach supports the exploration of self-tracking practices and the communication and encounters generated by personal data streams within health care.

Technological devices for self-tracking include scales, pedometers, sleep trackers, mood trackers, emotion trackers, and heart-rate variability measuring devices. These instruments are linked to the notion that self-monitoring tools, as they continue to enter daily use, offer an effective opportunity for people to understand their own lives as sets of numerical phenomena that can be examined and acted upon [3-6]. Tens of thousands of health related applications and devices have been developed, and self-tracking practices are expanding to new areas as the collection and analysis of personal data are advocated and implemented in different social contexts and institutions, including the workplace, schools, and hospitals. People are being seduced, encouraged, obliged, pushed, and coerced into using tracking devices for monitoring aspects of their bodies and lives and for producing personal data which can be used for the purposes of others [6].

This article sheds light on recent attempts to include self-tracking in health care practices in Finland by focusing on the uses of MealLogger, a visual food tracking application.<sup>1</sup> In exploring the

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<sup>1</sup> More information about different features and uses of the MealLogger can be found at [www.meallogger.com](http://www.meallogger.com). The application was originally developed in Finland under the name of MealTracker. Other simple and easy-to-use applications developed in Finland focusing on food photo-journaling – for instance, See How You Eat and Nordic Diet Coach – have also been surveyed for this article. The focus on

tensions and changes that might be promoted by using a phone application to transform eating habits into a photo journal, attention is paid to forms of knowledge production that underline and shape care practices, suggesting that self-tracking offers new modes of understanding and promoting health by uncovering visual and temporal patterns in people's lives. The focus on visibility and temporality points towards a well-established research tradition that explores modern notions of control and governmentality, the idea being that by making unknown aspects of bodies, minds, events, or temporalities detectable, we can gain more control over processes and entities concerning human lives. Within the health care context, patient care can still be defined by what Michel Foucault described as the 'clinical gaze', the dominant medical mode of knowing that came into being in the early-nineteenth century [7], one that is firmly rooted in the externalization of 'nature' as something that people are able to control and transform [8].

The discussion that follows, however, recognizes that visibility is not only formative for the clinical gaze and related attempts to diagnose and measure patients, but is also an essential aspect of everyday care encounters with important links to ways in which temporality is taken into account. Thus, rather than taking these themes – visibility and temporality – for granted, the aim is to explore how they are played out and practiced in relation to self-tracking within health care, in this instance, by demonstrating how self-tracking practices might unsettle current work practices, primarily because they promote a new way of seeing and treating the patient. In order to engage with the processes connected with visibility and temporality in a more detailed and reflexive manner, it is crucial to understand how temporality is materialized in care and how the practices and aims of visibility and invisibility offer vistas and visualizations of people's lives, professional knowledge, or technological systems. From this perspective, visibility is regarded as an active and collaborative process, rather than a static quality of presence or absence.

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MealLogger was finally selected because of the knowledge that had already been gained of its uses in health care.

## 1. Tracing connections

In ethnography, qualitative and quantitative research methods are applied to produce empirical material about what people say and do in particular situations. Even if the aim is that of developing skills for more short-term and goal-oriented ethnography', it is still useful to engage in longer-term ethnographic projects as part of training in Techno-Anthropology whereby an appreciation of the craft of ethnography and a better understanding of the limitations of short-term fieldwork could be developed. Typically an ethnographic study involves a continuous effort to develop and refine the research approach in the course of an assignment. An experienced ethnographer can conduct projects that aim to highlight particular aspects of everyday phenomena by adopting a creative, flexible, and even somewhat eclectic research approach that is adjusted and modified as the study proceeds, rather than being pre-planned. As I hope to demonstrate, this kind of research attitude is an advantage when studying emerging technologies, because it addresses the complex nature of techno-encounters, including the perspectives of various stakeholders.

Rather than producing 'a thick description' [9] of the ideology and history of self-tracking practices, the goal of this discussion is to highlight one particular aspect of self-tracking interactions: namely, the kinds of issues that emerge when health professionals are presented with data that details people's daily eating habits. The account is produced as a part of ongoing research collaboration, based at the University of Helsinki, which looks at practices of self-tracking and developments in personal data collection and the data economy. The research builds on literature that critically addresses current health technologies' hype which tends to portray the relationship between people and technology in an over-simplified manner: for instance, technologies are said to enable patients to participate proactively in their care, thereby diminishing the cost of health care delivery by reducing interactions with health care providers [10]. The aim of this discussion is to document what is being promoted by interactions between people, digital devices, and the data they generate and it is thus an intentional intervention in programmatic statements that represent self-tracking in a

decontextualized manner: as a solution rather than a starting point. The assumption is that self-tracking acts as an intermediary in improving health outcomes, but as long as we do not understand how health technologies participate in, and contribute to, care encounters contextually, the outcomes are difficult, if not impossible, to assess, measure, and scale. In order to support and empower people in care encounters it is also important to demonstrate that self-tracking is not simply a crude cost-cutting exercise, but, rather, that the goal is to deliver better health care [11].

The approach that I have used combines various methodological premises, including a discourse-centered approach to culture, the basic principle of which is that the discourses circulating in a social entity constructs the world in which the entity is situated or situates itself [12,13]. In concrete terms, I have focused on what receives the greatest engaged attention from the interviewed health care professionals in discussions concerning food tracking by means of a visual journal. In other words, “talk” is an important key to what people are interested in and what drives them and, therefore, a vital element to be examined when researching any social phenomenon. Significantly, health care and wellness professionals who are enthusiastic about the possibilities of engaging and involving people by using self-tracking devices position themselves as being part of a more patient-centric approach to health. They see themselves as being part of a culture of health care that uses digital devices in the better treatment of people, though the perspective is firmly focused on the ways self-tracking devices could promote and improve the work of care rather than being treated instrumentally as ‘care solutions’.

The interviewed health care professionals had used photo-journaling that focused on food via a smart phone application for treating people with eating disorders, stomach discomforts, weight problems, and mental health issues. Most of them had taken part in explorative pilot studies that took advantage of MealLogger in care work. The findings of these pilots, mainly in the form of narrative evidence and anecdotes, have been publicly presented in research

seminars and workshops,<sup>2</sup> and have also been used for product development and as promotional material for the Wellness Foundry, the start-up company that developed MealLogger. By relying on outcomes that are also used for marketing tracking devices, this research is part of a collaborative economy wherein market agents promote research that takes advantage of their devices, in order to reinforce the credibility and reliability of their offerings. This association means that our research has an inbuilt tension. One way to deal with this dilemma is to maintain a reflexive and inquisitive attitude to what is being promoted when people interact with self-tracking devices and the data they generate. From this perspective, the working method is a critical and open-ended conversation about personal data streams and their effects.

Much of the output of self-monitoring devices and mobile health applications fails to engage people, and it cannot be taken for granted that the data flows produced by health and wellness applications and devices are useful and of interest to all. Since this research follows the perspective of early-adopters or lead-users, who have found value in visual food-journaling in terms of promoting health, this discussion has an obvious bias. Self-tracking within health care is described from the perspective of professionals who see great promise in developing a form of care work that is assisted by data flows; they are not bothered by the persuasive powers and interventionist forces inscribed in measuring devices, but, rather, treat them as a welcome addition to health promotion. “I have a little engineer inside of me,” is how one of the nutritionists explained her enthusiastic and fearless attitude to self-monitoring technologies.

Yet the interviewed professionals do not treat food tracking uncritically as a universally appealing alternative. Various reasons are listed in discussions as to why people do not adopt visual food-journaling: they might not have a smart phone that supports the application and their technology skills might be modest, in which case a traditional pen and paper version of food tracking might work better; photographing meals can be socially awkward; tracking can be interpreted as emotionally too confrontational to adopt; or

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<sup>2</sup> A seminar on visual methods in food tracking, for instance, gathered together practitioners from the fields of nutrition and public health at the University of Helsinki in March 2015 to share their findings and insights. After the seminar a Facebook group was formed for disseminating knowledge and exchanging ideas.

motivation may simply be absent. Potentially negative or even harmful results of food tracking were also mentioned by the professionals who noted that it can encourage behavior that fails to promote health: the anorectics participating in pro-ana communities, for example, share weight-loss tips that take advantage of various forms of self-tracking [14,15]. In terms of health a key to successful self-tracking is the need and the will to address the current state of affairs. “Either there is a need for change, or a felt discomfort or disorder,” as one of the nurses put it. Nevertheless, with all its limitations, self-tracking is an inspiring aid in care work, according to interviewed health care professionals, who have identified a new kind of view provided of what and how people eat: the subject that receives particular attention here.

## **2. Enacting care**

In terms of highlighting emerging practices of care, it is important to focus on how self-tracking aids, supports, and obstructs relations between people: in this case, between the professionals and the cared for. Technologies offer new opportunities for these relations, but also disrupt them and direct their course, an insight that resonates with the insistence on the indivisibility of human and nonhuman agents and forces in actor-network theory [16]. When people do things, they are not subjects separate from objects, but part of chains that distribute competences and actions [17]. In the case of self-tracking practices within health care, personal data streams, data visualizations, and communication concerning the data become an active part of enacting care [2]. Self-tracking technologies permit the people involved to assess and expand their sphere of influence and activity, with the technologies becoming an inherent part of how people see, treat, and communicate with each other.

With an eye to examining the enabling forces of personal data streams, I gathered reflections on food tracking from health care professionals who included a general practitioner, a public health nurse, and a nutritionist. In the analysis of enacting care, I contextualized these reflections in relation to earlier research on self-tracking, and soon after the first interviews, I started to pay



more systematic attention to features that have been described as formative for self-tracking in previous research: namely, visibility and temporality [4,5]. It appeared that these two qualities offer insights into both the facilitating and unsettling powers of self-tracking within health care. At least in Finland, the new forms of visibility and temporality enabled by personal data streams do not fit comfortably into customary care practices. I address this unease by focusing on the particular qualities of food tracking and by describing how approaches to health, intertwining with tracking technologies, are generating new modes of interaction and communication. With the goal of further illuminating visibility and temporality, I also researched the perspectives of users of food tracking devices, and the active and dynamic relationship between people and self-tracking devices more generally. Thus, while the focus of this account is firmly on health care professionals, I offer some details of how people have been incorporated into care situations as users of food tracking applications. The perspective chosen offers important clues as to why personal data streams are enthusiastically, or not so enthusiastically, received within current health care practices; when people introduce self-tracking data about mundane everyday practices like eating or sleeping in the care context, they reveal intimate aspects of their daily routines that allow health care professionals to witness their lives from an angle that is not typical for clinical work.

### **3. Beyond the clinical gaze**

As I have already pointed out, the ‘clinical gaze’ is the dominant medical mode of knowing, that is, of detecting pathologies and abnormalities by localizing them; the doctor is in charge of the gaze and assisted by medical technologies that are used in the diagnosis of the patient [7], thereby positioning the physician firmly as active and in control of the situation in relation to the patient. I suggest that one of the discomforts connected with personal data has to do with unsettling and disturbing the clinical gaze; the element of personal visual mediation inherent to self-tracking applications, like the food tracking application discussed in this chapter, confronts the clinical

gaze and introduces new modes of relating, classification, and ordering to the care situation, as I will demonstrate. Moreover, self-tracking advances practices that visually and temporally document, retrieve, communicate, and provide understanding of physical and mental processes. On the other hand, while food tracking through photo-journaling involves bodily, emotional, spatial, and temporal aspects, it raises questions about these aspects rather than aiming to diagnose them. From this perspective, self-tracking does not create a closed-off situation or rigid doctor-patient positions, but, rather, opens up the patient's everyday life for guidance and negotiation, allowing health professionals to participate and intervene in the daily lives of people more than providing knowledge purely in order to form a diagnosis.

It is also true, however, that self-tracking technologies are used in health care to record aspects of people's daily lives in an attempt to target unhealthy behavioral patterns and lifestyles and, from this perspective, rather than evading the clinical gaze, self-tracking practices are spreading it beyond the clinic into people's daily lives, their kitchens, and their bedrooms [18]. As sociologist Deborah Lupton [10,18], reminds us, mobile and wireless health technologies are part of the same continuum as medical technologies that have for centuries been employed to render the body visible and to direct the clinical gaze upon it. By promoting processes that abstract and slice everyday activities into various kinds of data flows, self-monitoring offers vistas of people's lives which health care professionals can examine and react to. Tracking technologies record information about exercise, dietary patterns, and hours slept and can use software to communicate with professionals regardless of the patient's location or participation.

Following Lupton's [6] definition, the mode of self-tracking discussed in this chapter is 'pushed', referring to the fact that the impulse for engaging in self-tracking is not self-generated and privately initiated, but comes from an external agent. Advocates for pushed self-tracking promote, for instance, persuasive design systems for behavioral change, patient self-care in case of chronic illnesses, and wellness programs within workplaces. Self-tracking must be approved by the subject, but if it is taken up in response to

external encouragement, it may be used as a means of encouraging health and wellness awareness and for configuring a more digitally engaged patient or worker [19]. For instance, a young woman who used a food tracking application explained to me that a nurse had suggested it when her eating disorder worsened. At first the patient declined the offer: she thought that the tracking would make her control her food intake even more frantically. After some consideration, however, she decided to try it in order to make her eating more observable and to provide a more realistic view of how she ate. Thus an explicit aim of food tracking within the health care context is to engage people in following their eating patterns in order to nudge them towards health-related goals. Unquestionably, this activates and expands the clinical gaze.

What emerged from the empirical material, however, was not only evidence for the expansion of the clinical gaze, but also indications of at least a partial dissolving of it. As has also been noted by other researchers, while technologies extend the clinical gaze into the home, for instance in the form of telehealth, they may also offer patients the opportunity to avoid the gaze [see, 10]. Indeed, I suggest that its observable dissolving has to do with the possibility of enacting technology-aided care in a manner that affects the parties involved; the professional is still in charge of the situation, but self-tracking introduces elements that distribute the agency of care to the patient and the technology involved. In terms of Techno-Anthropology, the participation of all these agencies in enacting care is particularly thought provoking, because it underlines the indivisibility of human and nonhuman agents and forces in care work, and offers empirical support for exploring the enabling powers of personal data. In the following, I open a window onto these powers by demonstrating how health professionals might learn – through self-tracking data – about aspects of people’s lives that they have previously been unable to see. This might seem trivial, but is in fact no minor detail, because it frames the care work in a manner that promotes a new kind of structured uncertainty: the health professional is thrown out of the comfort zone of the clinical gaze into a world of negotiation, participation, and exploration.

#### **4. Witnessing everyday eating patterns**

A powerful and engaging aspect of self-tracking is that it seeks to make visible something that is typically not a subject of reflection, with the aim of converting previously undetected bodily reactions and behavioral clues into traceable information. Consequently, the design and technical specifications of tracking devices build on the notion that visibility is a key for understanding bodies, minds, and daily lives. The goal of food tracking is to simplify and summarize people's relationship to food on the basis of certain pre-defined assumptions. Many existing forms of food tracking depend on numbers, calories, and grams, but applications like the MealLogger rely on visual estimates: one cannot see from the photographs taken what kind of oil has been used in the salad, for example, or how many grams the steak weighs. The application is built on the assumption that the visual journal is sufficiently communicative, and that there is no need to unpack meals into numerical evidence. The communicative aspect is enriched by the possibility of sharing the visual diary with others. As is typical for mobile health applications, the sharing is made easy in the MealLogger application: the expert can see the pictures taken, evaluate the food eaten with a star system, and write posts about meals.

When confronted with the food journal the health professional will search for clues, categories, and patterns in the visual information. For instance, interviewees describe how they learn from the pictures about people's definitions of categories of food: thus a salad for some might consist of a can of tuna and a can of pineapple, while for others it might be something rather different. The health professional adopts a particular stance in relation to the patient by aiming to uncover and highlight aspects of eating behavior and food consumption that are important in terms of understanding the everyday life and discomforts of the patient. From the perspective of the clinical gaze, this is radical: the physician is operating in a field that is not bound by the clinical mode of knowing. The focus is on everyday patterns such as the overview of the meals, which also includes their coloring and variety. One of the physicians explained that it was impossible to imagine beforehand how much the coloring of the food could reveal, such as the fact that somebody

eats only beige food. Other people, the photographs reveal, are extremely repetitious in their daily habits: they eat the same thing at every single meal. Of diagnostic value is the fact that the photographs might reveal how one-sided the diet is in terms of nutrition, or how out of touch people are with their eating: one of the nurses described, for example, how her patient produced beautiful portrayals of miniature portions of food, indicating serious problems with eating. Thus the value of a visual food diary lies in its precise re-presentation of patterns and details of everyday life that might also become significant in terms of clinical work. The diagnostic work is not, however, what drives the enactment of care, which is more about witnessing and reacting to the patient's relationship to food, and possible harmful consequences of that relationship, in the context of daily life.

## **5. Rhythms of eating**

The visual patterns of food consumption, revealed by the photographs, are closely linked to the temporalities of eating. Once a picture of the food to be eaten has been taken, the MealLogger application generates a time stamp which offers further evidence of daily eating patterns. The aggregated photographs record that some people eat very regularly, while others only now and then; some eat all through the day, others mainly late at night. In terms of Techno-Anthropology, the everyday temporalities that the self-tracking applications make detectable and observable are no minor point. Self-tracking offers methodological support for uncovering how daily practices condition, and are conditioned by, temporal orders of the everyday. Evidence of the rhythmic order of weekly events can be found in people's eating, sleeping, working, online behavior, or in the ways they socialize: Saturday night in particular is dedicated to meeting friends [20]. Despite detailed time-use studies, relatively little is known of the rhythmic ordering of people's lives in terms of health and wellbeing. From this perspective it is not surprising how illuminating it was for the interviewed professionals to start witnessing how eating patterns are temporally ordered. The daily rhythms of eating reveal how people position themselves in relation

to food: food might be a regular or irregular element in their life; eating might start the morning vigorously, or provide comfort late at night. One of the interviewed nutritionists talks about how unconscious the rhythmic ordering of eating might be: she tried the MealLogger before she started using it with her customers and discovered that she was a ‘nibbler’, easily taking nine pictures a day of food ingested, with the typical number of her customers’ meals being five or six. The main revelation for her was that she did not expect this kind of finding.

The health care establishment is not trained to approach health and wellbeing in terms of everyday temporalities: the clinical gaze is characteristically atemporal. A focus on the daily rhythms of people’s lives opens an alternative view to health by drawing attention to the temporal nature of disorders in daily lives. For instance, addictive behaviors, such as drinking or gambling, are characteristically time-consuming; in terms of diagnosing an addiction, one could concentrate on time use and treat addictions as repeated practices that have damaging consequences in terms of health and wellbeing [21]. Empirical studies offer support for the temporal character of addictive behaviors by offering testimonials of addiction that replicate notions of circularity and lost time horizons [22,23]. Compulsive behavior becomes visible and identifiable through repetition as everyday practices start to center and focus on certain activities, though the unsuccessful balancing of temporal orders is not a cause or effect of individual health disturbances; rather, these two aspects co-create and support each other.

By paying attention to the timing of eating, food tracking offers the possibility of examining the temporal foundations of health. Various health complaints, including stress, anxiety, sleep deprivation, depression, or substance abuse, are connected to irregular and damaging time use: people do not have enough physiological regularity and recovery in their lives. A visual journal of daily eating patterns acts as a mediator and a translator, highlighting problems in the daily balancing of everyday rhythms. For instance, students who live alone for the first time in their lives might eat irregularly: with no parental guidance and assistance their

diet deteriorates. Their stomach discomforts are not necessarily a sign of illness or food allergies, however, but probably a consequence of irregular and erratic eating. A simple food tracking application can reveal the origin of their disorders without clinical tests or medical imaging technologies. This suggests that if used for enacting care in a manner that takes the everyday circumstances of people into account, self-tracking technologies are more likely to deliver on their promise of supplying health care at a lower cost [24].

## **6. The coaching health professional**

I have argued that self-tracking technologies aid in bypassing and even dissolving the clinical gaze. A further indication of this lies in the reflexive attitude outlined by a public health nurse that offers concrete evidence for rethinking diagnostic practices. She has actively used food tracking in her care work and explained how she no longer thinks or cares about whether a person has an eating disorder, or a metabolic syndrome: she is only interested in healthy eating. This approach connects with processes of health making, suggesting that rather than seeing health as a bounded entity with a preordained ontology and categorical grounding, it should be regarded as a constant movement towards becoming healthy. The role of food tracking is to aid, direct, and guide this undertaking; while it does not produce health by itself, it becomes part of an alliance for generating health. Significantly, however, whether the tracking application will fulfill this aim might not be known beforehand: thus, by using self-tracking technologies in care work the health professional's role becomes more explorative. Only by experimenting with self-tracking technologies can one discover exactly what each device promotes in terms of health making and what it requires from patients and professionals [24].

The explorative role of the professional introduces elements of uncertainty and openness to processes of enacting care as the health care professional bypasses familiar ways of approaching potential illness, thereby raising new kinds of questions and perspectives for inspection. An obvious problem for validating the clinical utility of self-tracking applications, however, is the difficulty of determining

a baseline: for instance, it is questionable whether self-reported data on eating is a valid baseline for measuring the efficacy of using a visual food journal in an intervention [25]. Once people start tracking themselves, they also begin to use the tracking as behavioral and emotional guidance: photographing one's meals has an effect on what one eats and, consequently, the visual record. In other words, self-tracking is an intervention in itself [4]. Documenting the contents of a meal, or the rhythms of eating, might be so revealing of the everyday that people might stop photographing all the food they ingest, or start adding healthy things to their plates to please the health care provider. Unconsciously, the self-tracker might want to upgrade, through photographs, how she is perceived by an outsider. For instance, one woman in her twenties described how keeping the visual food journal made her invest in her meals, both in terms of nutrition and aesthetics.

Discussing what people do not photograph, and how they add vegetables to their plates and stylize their meals for the visual journal, is an important part of enacting care. Photographs taken are not treated as authentic evidence of people's eating, but they do offer a communicative route to an area of life in which people might need support. The pictures, and talk about the pictures, address the intimate and emotional nature of people's relationship to food: how they might not be able to control how they eat, or how they might be ashamed of the contents of their meals and the times when they eat. The interviewed nurse had treated people who were so embarrassed and guilty about their eating that they only ate alone; they had no model of how to eat properly and in front of others. They could, for instance, eat without a plate and drink milk directly from the carton. For them, documenting their meals and making their eating patterns visible to an outsider is already a major accomplishment in terms of the care process, even if the documenting is partial and incomplete.

Food tracking might offer a less invasive and threatening way of portraying lives than verbalizing problems of eating: one can take a picture alone, and only the care professional has access to it. Relevant to the latter process, one of the interviewed nutritionists notes that she sees little value in food tracking in connection with



eating-related issues and problems without professional support: for her the relationship between the expert and the user is the most vital element of enacting care. Interestingly, the relationship can be geographically distant and intimate at the same time, and she has supported people who live in different parts of Finland, although they might have only met face-to-face once or twice. Still, these meetings are crucial: “I need to see how the person gestures, talks, and sits.” She talked about the importance of the overview that she gets by observing the person and “by using my antennae and relying on intuition”, and underlined an aspect of food tracking that comes out repeatedly in discussions about its use: eating is such a personal and sensitive matter that the guidance offered needs to be subtle and discreet, although once the nutritionist learns how to address the client, she might be bolder and more demanding. She also mentioned the importance of humor in these encounters. The playfulness and creativity of people interacting with tracking devices has been recognized: what is significant in her account is that the playfulness might be an important part of enacting care. She described, for example, how men she has coached took photographs for their visual journals of their restaurant bills, or of apples carved with emoticons.

The empirical material suggests that in terms of food tracking that aims to have a positive impact on people’s health, personal data streams should not be taken at face value or treated as uncomplicated externalizations of people’s interiors. A competent health professional sees beyond the promises of the apparently rational and motivated self-tracker who claims to control his or her life and destiny with data streams. The goal is much more modest; rather one of using self-tracking data as part of the effort to identify harmful patterns in daily lives and to address them in conversation. Time and again the interviewees talk about how keeping a visual food journal and sharing it with an outsider make people more conscious of their choices and practices; people become more aware of not only what they eat and when, but of how they place the food on the plate. Mothers of young children, for instance, often begin to think about the meal as a clearly defined item, meaning that they are less likely to eat half their portion while they are cooking, or consume leftovers from children’s plates. Food tracking, based on a visual journal,

enacts care in a manner that involves people and pushes them to reflect on and change their behavior. By doing so, this form of tracking develops self-awareness and produces everyday transformations that have been identified as crucial for patient empowerment and self-management of health [24].

## **7. Conclusions**

This chapter has argued that by introducing new modes of relating, classification, and ordering to the care situation, self-tracking applications aid in disrupting dominant ways of seeing and treating the patient. Self-tracking opens for observation something that is typically not a subject of reflection: the tracker converts meals and eating times into traceable and actionable evidence, and the data thus generated is used as a communicative aid in treating people. Self-tracking can assist, for instance, in reaching the goal of balancing eating, sleeping, or overall time use in an approach that is preventive and supportive rather than reactive; it actively avoids trivializing people's experiences. In fact, the interviewed professionals emphasized the need for a more mediated and socially responsive definition of health.

The research agenda outlined in this chapter is particularly productive when the objective is to learn how technologies become intimately involved in knowledge formation, including that generated by experiencing ourselves and others through new visual and communicative devices. In terms of Techno-Anthropology, this kind of approach emphasizes the need for interactional experts who know how to combine and balance the user's perspective with those of professionals, or provide a bridge between the two positions [26]. I have described how food tracking offers visual mediation that supports health care by unpacking a patient's everyday life for inspection, guidance, and negotiation, but in order to promote the successful integration of self-tracking with care work, one needs to understand how tracking devices become part of enacting care and how they shape their users, whether health care professionals, or people with health problems. In other words, insights produced through ethnographically-oriented research offer the possibility of

learning how emerging technology, in this case self-tracking, can strengthen or block developments that people see as valuable and worth pursuing.

Various methods are useful in ethnographically-oriented efforts in Techno-Anthropology. A discourse-centered perspective is valuable in exploring, through speech, what drives people in their everyday actions and aims, whereas the focus on the dynamics of human and nonhuman relations informed by actor-network theory assists in the study of the material, social, and technological underpinnings of people's encounters. Throughout the research reported here, the aim has been to understand how self-tracking discursively and practically promotes and accelerates changes in the health field. It must be remembered that numerous practical barriers exist to using even fairly simple self-tracking applications, like the one discussed in this chapter, in established health care institutions. Some of these have to do with the ownership of tracking data: health care institutions might not be comfortable using data that is generated and stored by another company, for instance, because of issues related to data privacy and security. Another barrier to adoption is the incorporation of self-tracking applications into the work flow of a health care organization. One of the interviewees described, for example, how the health care institution wanted the log-in page to the food tracking application to be on the organization's website, but that was complicated by the number of existing phone models and relentlessly updated software. Payments are a further unresolved area, raising the question of what the tracking device users should be billed for: the use of the application, or the professional's comments on the patient's meals?

Some health care organizations in Finland have found workable solutions to such issues, but for the most part they are still largely unresolved. Companies promoting self-tracking applications, and health care professionals who share an interest in developing their expertise and institutional practices, are working together with the conviction that they will produce better care. Techno-Anthropology can address these efforts in order to promote mutual learning and interactions with various stakeholders in the health field. More generally, health care is developing and changing in reaction to

specific situations or circumstances including technological and economic developments, as well as in more encompassing ways by shaping and transforming what it means to be a doctor, a patient, or to enact care. This chapter has outlined some developments that appear important and disruptive in terms of care work, but it also serves as a reminder of the contextual nature of research findings: self-tracking is characterized by processes that are distributed across many kinds of locations and power networks, and it is important not to assume that these technologies work in a straight-forward and uncomplicated manner. This account has particularly emphasized the role of self-tracking in uncovering visual and temporal patterns in people's lives in order to promote health. From this perspective, self-tracking can be adopted as part of a new way to enact care and to experiment, connect, and learn, gaining value in relation to the social and communicative processes that it promotes, and adding to the possibilities of rethinking and re-enacting health.

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