ETHICAL IMPLICATIONS OF WEARABLE TECHNOLOGY IN THE WORKPLACE

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By

Samantha Miller

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On my honor as a University student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments.

ADVISOR
Catherine D. Baritaud, Department of Engineering and Society

In his 1930 essay *Economic Possibilities for Our Grandchildren,* the economist, John Maynard Keynes, predicted that "science and compound interest will have won" humanity the gift of time (Keynes, 1930, p. 358). He proposed that by the twenty-first century society would be functioning in a fifteen-hour work week and that "for the first time since his creation man will be faced with his real, his permanent problem" of, "how to occupy the leisure" (Keynes, 1930, p. 358). Unfortunately, economists of the early 20th century did not foresee that work is no longer a means of buying free-time, but rather a means of identity production (Thompson, 2019). The American identity largely revolves around accumulating more hours at the office despite the fact that a staggering 87 percent of employees are not engaged at their job (Thompson, 2019). This fact suggests that the modern workplace cultivates a culture of productivity rather than efficiency, eliminating the potential for the valuable leisure time Keynes predicted in 1930.

According to research done by Till Roenneberg, author of *Internal Time,* getting to the office by 8 am requires that 69 percent of the population wakes up before their bodies are ready (Vetter, Fischer, Matera, & Roenneberg, 2015). The technical project was inspired by this societal misalignment between biological and social clocks; it aims to make people aware of their unique circadian rhythms so that they can better manage their time and achieve high performance at work and in their daily life. The desired effects of a wearable technology that provides recommendations based on chronotype is a circadian-aware society in which companies, for example, accommodate their employees' unique rises and falls in productivity.

The STS research paper and the technical project are tightly coupled in that the STS perspective will provide a means of forecasting the effects of novel wearable technologies in the workplace. Often in engineering little is known about the possible outcomes of a technical project, such as the practicalities of chronotype adjusted scheduling. The social experimentation

model of engineering suggests regarding technical projects as inherently risky activities in order to explore the scope of their ethical implications (Martin, 2010, Chapter 4, p. 78). This approach in tandem with Bijker and Pinch's (1984) Social Construction of Technology (SCOT) model will lead to the discovery of the appropriate way to manage wearable technology, such as the completed technical project, in the workplace.

RISE IN MOBILE HEALTH TECHNOLOGIES WITHIN A SOCIETY GREEDY FOR PRODUCTIVITY

The introduction of wearable technology in the workplace is no longer a hypothetical scenario looming in the future. In fact, a number of companies have required that their employees participate in health data collection, such as CVS Pharmacy who demands that employees using their health plan provide certain biological data; otherwise, they must pay a fine of $50 per month (Brown, 2016, p. 5). While it is true that gathering employee data from health monitoring devices can encourage workplace fitness and reduce workplace losses due to illness and absence, it also poses problems in regards to morality and privacy. Relevant lawyers and social scientists have expressed their concern over employee wellness programs that seem to be becoming ever-more intrusive and coercive, while also acknowledging the lack of federal law protecting employees' health and fitness data from potential misuse (Moore & Piwek, 2017, p. 8). To prevent violations of user's privacy, the STS research project will identify the relevant social groups involved in the adoption of wearable technology in the workplace, and describe the potential ethical issues that may arise from mishandling of the data. The Social Construction of Technology (SCOT) framework will provide a means of interpreting motives and describe the forces contributing to the larger network of wearable technology in the workplace.

Social groups affected by wearables in the workplace

Bjiker's concept of The Social Construction of Technology (SCOT) framework is based upon the principle that the developmental process is determined by technical problems resulting from applications of technology by specific social groups (Pinch & Bijker, 1984). These various social groups exercise interpretive flexibility in which the same artifact carries different meanings, thus transforming the technology in separate or coexisting directions (Kline & Pinch, 1996). This concept can be applied to wearable devices, as depicted in Figure 1. The various social groups interact with the technology, and sometimes each other, creating a network of contributing forces to the development or altering of the device.

Each social group depicted has varying interpretations and motivations regarding wearable technology. According to Brown, a professor of business law at Bentley University, the collection of health-related data sits at the convergence of three trends: The Internet of Things, the Quantified Self Movement, and the rise of the health data platform (Brown, 2016, p. 9). All of these trends affect the common user of wearable technology.

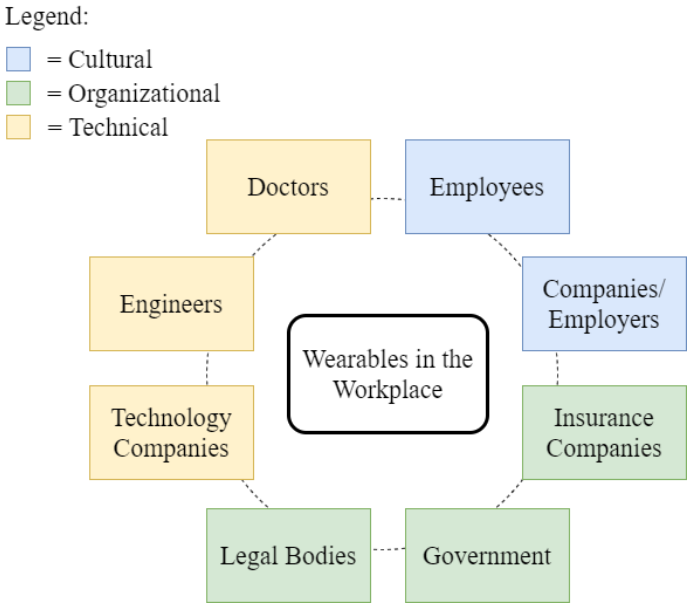

Figure 1: SCOT Framework for Wearable Technology in the Workplace: This depiction of wearable technology demonstrates the various stakeholders that lie on the boundary of the main artefact, wearables (Adapted by Samantha Miller from W. Bjiker, J. Bonig, & E. van Oost, 1984).

The Employee Social Group at Risk

The relationship between the cultural social groups identified in Figure 1 on page 3 is an interesting one, as it raises concerns over coerced consent and employee stigmatization. When considering the workplace, an employee may participate in data collection because perceived benefits outweigh risks; they are influenced to surrender their privacy for a tangible reward (Gauttier, 2019, p. 353). Furthermore, the hierarchical relationship at play between employees and managers raises the question as to whether opting in or opting out is ever really possible and if the relationship between the two parties is consensual (Moore & Piwek, 2017, p. 8). In fact, in their identification of vulnerable subjects, the National Bioethics Advisory Committee included employees under the category of "Institutional Vulnerability" because although these individuals have the cognitive ability to consent, they may not be able to make a truly voluntary choice due to coercion (National Bioethics Advisory Commission, 2001). Another external factor contributing to an employee's adoption of wearable technology may be the fear of being shamed for not participating in a wellness initiative. As employee monitoring becomes normalized, the employee choosing not to measure their productivity, or stress, may be seen as abnormal (Moore & Piwek, 2017, p. 8). Therefore, the rise of health data platforms may ostracize those choosing not to surrender their data to the Internet of Things, and favor those who are extrinsically motivated by the illusion of digital productivity, also known as the Quantified Self.

The Quantified Self Enabling Unethical Decisions

The concept of the Quantified Self is greatly encouraged by the employer social group within the cultural category in Figure 1 on the previous page. Using data collected on their employees, companies can adjust employees' health care premiums depending on how much physical activity their wearable devices monitored, forecast absences due to illness, and prevent

workplace accidents based upon recorded physical fitness (Brown, 2016, p. 5). This practice reduces employees to strictly data, and hours spent sitting at a desk or speaking with a supervisor quantify productivity. Immeasurable or qualitative aspects of the labor process such as taking breaks to encourage creativity, now may be used against employees because they do not translate to efficiency (Moore, 2016, p. 4).

Redirecting the purpose of the introduction of wearable technology in the workplace from one of encouraging physical wellbeing to one of surveillance, opens the door to a number of potential invasions of privacy that must be mitigated by the organizational social groups. Legal scholars are concerned about what limits employers from using the complex insights provided by these devices for discriminatory hiring, promotion, and other related decisions (Ajunwa, 2018, p. 44). For example, if an employer is trying to decide between which of two candidates to promote, they may review each candidate's biometric data for conditions that correlate with lower productivity levels or higher health insurance costs. In 2019, around 20 percent of employers who offered health insurance collected data from their employees' wearable devices (Rowland, 2019). There are currently no federal anti-discrimination laws to protect employees against decisions made based upon wearable device data (Brown, 2016, p. 20). While the Health Insurance Portability and Accountability Act of 1996 (HIPAA) serves traditional health care well, mHealth technologies and health social media are currently outside of the scope of the act (U.S. Department of Health and Human Services, 2016, p. 1). According to policy lawyer, Joe Jerome, if an employee voluntarily gives health data to an employee or a company such as Fitbit, HIPAA restrictions prohibiting disclosure of personal health information are not applicable (Rowland, 2019). In fact, Fitbit's privacy policy states that it shares information to "corporate affiliates, service providers and unspecified 'other partners'" (Rowland, 2019, n.p.). Figure 2

below illustrates the scope of big data being collected in the workplace, and how the employee as a user is largely isolated from the system. They likely are unaware of where their data goes beyond the office walls, and as a result may fall victim to unfair treatment and decision-making. Because users are outside of the network, it will be up to the organizational and technical social groups to consider the interpretive flexibility of wearable technology to protect users' rights.

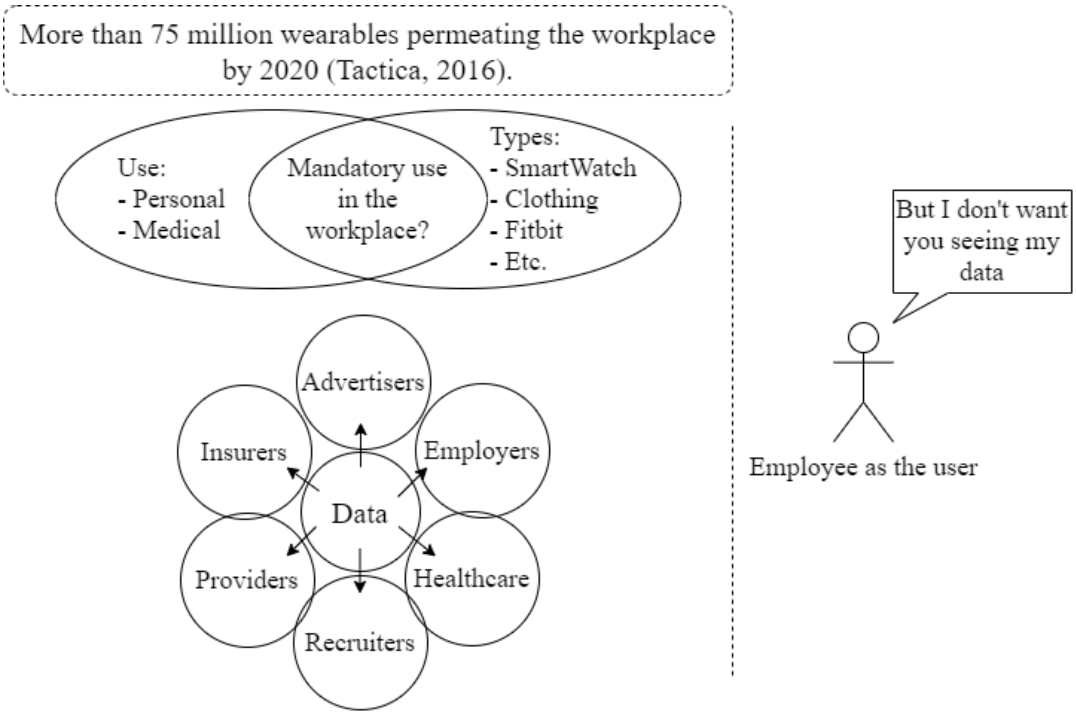

Figure 2: The Isolated User: This figure represents the user on the outside of the barrier of wearable technology, represented by the dotted line. The amount of data can be understood by the 2020 prediction of the number of wearables, their different uses, and the different types. This data may be distributed to a number of different parties without the user's knowing (S. Miller, 2019).

WEARABLE TECHNOLOGY REVEALING PRIVATE MEDICAL CONDITIONS

Thus far in the paper the analysis focused on scenarios in which the wearable technologies are for personal use. Later, a solution will be proposed to reduce the degree of privacy invasion experienced by employees from their employers. In order to reach a comprehensive understanding of the problem, one must consider the second use of wearable technology in Figure 2 on the previous page, which is wearables for medical purposes.

For example, is an employer allowed to inquire about a visible patch one of their employees is wearing on their body that helps them with their nicotine addiction? The Americans with Disabilities Act (ADA)—a law enacted to ensure that people with disabilities are guaranteed basic rights, such as protections in the workplace—does not provide a list of what is and what is not a disability and thus worthy of a reasonable accommodation (U.S. Equal Employment Opportunity Commission [EEOC], 2000). This law forbids employers from making disability-related inquiries unless it is "job related and consistent with business necessity" or the employer has reasonable belief that the employee's condition impairs them from doing their job or poses a threat (U.S. EEOC, 2000). Clearly these guidelines are largely subjective, and given the lack of clarity regarding what is covered by the ADA there is little reason to suspect that an employer asking about technology related to nicotine addiction is illegal. Once an employer learns about this very personal information, or if a wearable technology yields clues to such a medical condition during a wellness initiative, a snapshot of the employee's health becomes clearer (Rowland, 2019). This knowledge in addition to data about past doctor visits or social predictors of health such as credit scores can result in potentially costly health insurance risks.

Balancing the benefit of wearables between employers and employees

The primary question that needs answering to prevent misuse of employee health data is how one finds a balance of interest between employees' rights to privacy and employer's' responsibility towards managing the workplace. In a society full of sensors and data, how does one draw the line on what is personal information and what is public? Furthermore, how does one protect the rights of individuals once their status has been exposed? An effective way to comprehend this challenge is by considering the scenario in which an employee is seeking fertility treatment.

A rights ethicist would likely argue that every human has the right to start a family, and deserves the opportunity to seek alternative methods of starting one if they are not able to naturally. More specifically, under care ethics there is moral significance in promoting the well-being of care-givers, as well as caring for those who are dependent and vulnerable (Sander-Staudt, n.d.). With these principles in mind, the U.S. Supreme Court held in 1998 that infertility is a disability under the ADA, but subsequently held that an individual is not considered disabled if the obstacles faced can be overcome through corrective measures (Spigel, 2005). This vague definition explains why an employer's health plan that excludes treatment is not discriminatory under the ADA if it applies to all employees (Spigel, 2005). Many companies have begun to recognize the right to get pregnant by introducing coverage or greatly increased dollar amounts for in vitro fertilization (IVF) treatment coverage (Grigoriadis, 2019). Despite this shift in coverage, many women still feel uncomfortable telling employers about impending pregnancies out of fear that potential required leave will penalize them (Grigoriadis, 2019). While it is true that failing to provide reasonable accommodations in the form of a day off for IVF treatment may constitute an ADA violation, it is not guaranteed (The Spiggle Law Firm, n.d.). Another

protection, Title VII, as amended by the Pregnancy Discrimination Act (PDA), may protect women from illegal sex discrimination if they are fired on the basis of taking time off from work for infertility treatments (The Spiggle Law Firm, n.d.). Both the ADA and the PDA require a woman to build up the strength to reveal something deeply personal to a colleague or manager. The trauma of infertility, and the panic involved in having the correct timing may deter a woman from disclosing their treatment plan. Furthermore, since employees are not required to tell their colleagues why they are taking a day off it may feel more comfortable for women to keep it to themselves. For example, if they are in the middle of a meeting and receive a notification from their wearable technology that they need to take a supplement for their IVF treatment, they may worry that the disruption will cause their firing but prefer that over disclosing their condition.

Some companies have begun to offer the period and pregnancy-tracking app, Ovia, as a means of encouraging their female employees to feel comfortable family planning. However, what these women and mothers may not know is that their employers pay the developer of the app to relay their health data in a supposedly de-identified aggregated form (Harwell, 2019). Doing so helps employers minimize health-care spending, discover medical problems, and better plan for the months ahead (Harwell, 2019). While it is true that Ovia complies with privacy laws, and that the app does an effective job at positively impacting the process of conceiving and giving birth, it also holds one of the largest data sets on women's health in the world (Harwell, 2019). This data is viewable by the company, their insurers, and third-party administrators that process women's medical claims. Furthermore, health and privacy experts say it is relatively easy for one to re-identify a person by cross-referencing that information with other data despite its anonymity. One argument as to why an employer may want access to this data is that if their employees have healthy babies then that means higher productivity and a greater ability to focus

on work. According to an Ovia marketing document, “an average of 33 hours of productivity are lost for every round of [IVF] treatment” (Harwell, 2019, n.p.). Therefore, it is in the company’s interest to encourage their employees to use a platform such as Ovia to aid in their family-planning if the women are told they can rely on the fertility algorithms to conceive and for the employers it will reduce unpredictable health-care expenses. Paula M. Castaño, an obstetrician-gynecologist and associate professor at Columbia University expressed her concern with the trend of employers focusing on “variables that affect time out of work and insurance utilization” during a time when mothers and families in the workplace cannot trust their employers to have their best interests at heart (Harwell, 2019, n.p.).

CLOSING GAPS IN CURRENT FRAMEWORKS AIMED TO PROTECT WORKERS’ DATA BY ADHERING TO PRECEDENTS MADE FOR MEDICAL CONDITIONS

A pragmatic approach to solving the current state of wearable technology in the workplace is the only way to protect employees’ rights not only data privacy, but the right to not be discriminated for medical conditions and disabilities. In this paper, the Social Construction of Technology framework and the social experimentation model fleshed out the various motives for employees partaking in data collection, the factors contributing to company-wide data misuse, and the resulting risks. Uncovering the forces involved in data collection reveals a parallel to employees disclosing medical conditions. Setting precedents for physical and mental conditions can close gaps in the current framework aimed to protect workers’ data. Companies cannot succeed in accommodating their employees’ unique circadian rhythms or preferences in the work environment until there are stricter enforced policies to protect employees from unfair biases and discrimination due to their conditions or their data. There are many benefits to using wearable technology in the workplace, such as encouraging physical activity, family planning, and tracking productivity. However, although technology allows employers to ask more of each

employee, it does not mean that they should. In a speech by Laura P. Hartman, Grainger Chair of Business Ethics at the University of Wisconsin-Madison, argues that "if someone questions you too much or takes away too much of your power, the ultimate cost may be your emotional security", and as a result a loss of, "one's ability to be autonomous in controlling one's personal information" (Hartman, 2002). The California Consumer Privacy Act (CCPA), enacted in 2018, was put in place to hold companies accountable for how they handle personal data, and to give California residents the right to view the information companies collect and sell about them. However, an act such as this is inherently difficult to enforce given the lack of penalties for noncompliance, unclear rules, and the ability to loosely interpret its restrictions (Bensinger, 2020). Clarifying employee rights to keeping health conditions private will set a standard for protecting health-related data collected by wearables. These changes will encourage expansion and improvement of the CCPA and ultimately cause a shift in priority towards employee autonomy and the right to living a well-rounded life.

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