

Menstruation data: Sensitive and personal, but not mine?

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The proper nature of the relationship between people and their personal data is yet to be determined. Are personal data trivial to us like a piece of clothing, or more intimate and personal, like our thoughts and feelings? Does it matter how we view this relation? In this article, we present a philosophical critique of the unownability approach to personal data and outline some of its shortcomings. Menstruation data is an example of a particularly sensitive and personal type of data, and we argue that such data should be recognized as personal property, belonging to the data subject. In the following, we start by displaying how and why personal data ownership becomes such an intricate issue and conclude by suggesting that the personhood theory of ownership can provide a foundation for moral ownership, where other theories fall short.

Keywords: Data ownership, Privacy, Ethics, Personhood, Alienation

Introduction

Who owns your reproductive health data? Period and fertility tracking applications (PFTA) make up a type of digital health technology that is booming. In just a few years, they have become one of the most popular health applications worldwide (Karasneh et al., 2020; Neiman et al., 2025; Rampazzo et al., 2024), and the most popular app, Flo, reports over 380 million downloads globally (Flo Health, 2025). Powered by big datasets, combined with machine learning and calculating capacities, these applications help users keep track of a range of aspects related to reproductive health, by presenting predictions and analysis of the users' cycle and activities (Hamper, 2020; Shipp & Blasco, 2020; Zohora & Khondaker, 2025).

Based on data output, users can plan or prevent pregnancies, track menstrual cycles, ovulation, sexual activity, and learn about their bodies and selves. But to make the period and fertility predictions personalized and accurate, lots of data must be collected from the individual user and then be worked on (Luo et al., 2025). Some data are generated actively by the users themselves, whenever they log their experiences into a formalized digital system (Schartum, 2021, p. 97). Examples of such "active" data can be bleeding days, bleeding strength, cramps, sex drive, contraceptive methods, medicine intake and similar. Other data are collected by the

app itself or from other IoT-devices or sensors that directly register aspects of the physical world without making the “detour” through human interpretation (Schartum, 2021, p. 97). These “passive” data can be body temperature, activity level, heart rate, location, sleeping patterns, etc.

People use reproductive health apps for various reasons, such as contraception, supporting conception, or simply monitoring their overall health (Arbeena et al., 2025; D. Epstein et al., 2017; Gambier-Ross et al., 2018). For people who menstruate, access to their reproductive health data can be crucial. It gives enhanced knowledge about their reproductive capacities while also helping to prevent humiliating situations (Hamper, 2020). In many cultures – if not most – menstruation is still connected to shame and stigma – something to be hidden and managed in private (Chrisler, 2011). While there have been efforts to create openness and period-positive approaches, the topic still sparks embarrassment, fear, and vulnerability, with leaking fluids connected to a lack of control (Chrisler, 2011). Hence, PFTAs have been a welcomed technological tool for a wide range of users consisting of girls, women, non-binary, and trans people. With features including visualization of cycle, statistics, notifications and personalized analysis, PFTAs empower its users to make “informed choices for themselves around menstrual, sexual, and reproductive health and well-being” (Clue, 2025).

Yet, for all the good PFTAs do for its users, most period-tracking applications have been developed with the specific aim of harvesting and monetizing these sensitive and personal data, to target the critical time when new products are needed and new shopping patterns are established (Privacy International, 2020; Zuboff, 2019). There is a whole industry dedicated to the trade of personal data (Novotny & Hutchinson, 2019), which has grown to be one of the most popular business models of the twenty-first century (Véliz, 2023). In this business, reproductive health data are considered an especially lucrative type of data that generate big profits for data brokers and advertisers (Rosato, 2020). Data brokers, insurance companies, advertisers, anti-abortion groups and even government agencies may purchase reproductive health data in order to surveil pregnant bodies (Chong, 2023).

PFTAs typically fail to transparently disclose how data and information is used and shared (Healy, 2021; Punzi & Thuis, 2025). Moreover, people are granted few tools to protect themselves against data-hungry agents (Hakkala & Koskinen, 2022). Thus, while “femtech” rhetoric centers around empowerment through knowledge about one self, it also creates vulnerability through illegitimate surveillance and insufficient data security (Cao et al., 2024). This is especially problematic considering how these apps generate data that can discriminate, reinforce gender binaries and stigma, and deprive menstruators of control over their personal data. And while users continue to datafy ever more sensitive aspects of their bodies and lives, important moral challenges of personal health data collection and use are left unresolved. How are we to conceptualize the relationship between people and their personal data? And who owns these sensitive and intimate data?

Menstruation data and self-relations

Most period and fertility tracking applications operate on a free-to-use model, generating revenue through sale of user data to advertisers and industries keen on evaluating women’s preferences (ORCHA, 2023; Tylstedt et al., 2023). Most PFTAs are therefore designed to encourage users to continually input additional data,

offering access to special features as an incentive. Users are asked to provide not only basic demographic details like their name, birthday, and email address but also divulge intimate personal information such as sexual preferences, moods, feelings, cravings, digestion, medicine and supplements intake, pregnancies, and specific indicators like the characteristics of menstrual flow or the quality of cervical mucus (Patel et al., 2024).

A study of ten popular apps, including period trackers, found that data such as gender, age, IP, GPS locations, and user behavior was shared with at least 135 companies involved in advertising and behavioral profiling (Myrstad & Tjøstheim, 2021; ORCHA, 2023). This network included major tech companies like Amazon and Facebook, as well as smaller advertising firms. Hence, PFTAs have faced criticism for compromising user privacy, perpetuating stereotypes, and engaging in discriminatory practices (Geampana, 2024; Mozilla, 2022; Rosato, 2020) and concerns have continued to grow, especially in the USA where the 2022 overturning of *Roe v. Wade* suddenly made PFTAs into potential liabilities. Data from these apps can now be subpoenaed and used in legal cases, potentially revealing if someone has sought or considered an abortion (Grenoble, 2022; Haggin, 2022; Paul, 2022). Consequently, experts advised users to delete these apps to protect their privacy (Garamvolgyi, 2022; Glenza et al., 2022).

Looking at the data hungry world we find ourselves in, the data ownership question is urgent, and it is not limited to period and fertility apps. The ownership question pops up in relation to many apps and our online presence more generally. Tracking puts people at risk of being illegitimately prosecuted and surveilled: experiencing reputational harm, like when intimate information is exposed publicly; financial consequences, e.g., through price discrimination (Zuiderveen Borgesius & Poort, 2017); intellectual risks by the formation of ‘filter bubbles’ (Pariser, 2011); or restrictions on free speech (Van Zeeland, 2024). Yet, looking at menstruation and fertility data, the ownership question becomes especially salient: While PFTAs support individual autonomy and moral responsibility (D. A. Epstein et al., 2017; Freis et al., 2018; Lee & Kim, 2019), they also create vulnerability and serve other means.

Sensitive and personal, but not mine

Use of reproductive health data affects choices, actions, experiences, quality of life and possibilities in society, yet we still do not know how to tie this sensitive category of data to the data subject by other means than the “opt-in” consent-based approach. While many view datafied information about their bodies as deeply personal (Lupton, 2016; Zuboff, 2019, p. 3), personal data ownership *by the data subject* (meaning the person the data derive from) is not recognized under any property law (Thouvenin et al., 2017). In practice, these data are considered a rangeland for appropriation and exploitation.

Establishing juridical ownership faces several challenges. First, the juridical tradition treats data and information as unownable entities meant to flow freely and inform all (McGuire et al., 2019). Thus, to the degree we can talk about ownership, data is a common or collective good and should be everyone’s (or no one’s) property (Montgomery, 2017; Prainsack, 2019b; Ursin, 2010). Second, the scope and content of data ownership, and who the rightful owner would be, remain unclear (Coppola et al., 2019; de Lecuona & Villalobos-Quesada, 2018; Fadler &

Legner, 2022; Rosner, 2014). Third, justifying data ownership is complex, as much of what we consider “personal” data also relates to others and exists due to shared knowledge and technological advancements (Hildebrandt, 2015; Thouvenin et al., 2017).

Juridical ownership is mostly conditioned by objects being rivalrous or excludable, meaning that it can shift hands (Thouvenin et al., 2017). But data can be in multiple places at once without deteriorating or losing value and leave traces even when they are ‘deleted’ (Prainsack, 2019a). Hence, many end up arguing *against* juridical ownership in data, because of its intangible characteristics and odd make-up. Moreover, personal data ownership would be contrary to well-established legal precedent which “for good reasons do not recognize property interests in mere facts or information. (...) Granting individuals a high degree of control over health data may hinder valuable biomedical research” (Contreras et al., 2018).

But the philosophical discourse too is characterized by a reluctance against acknowledging personal data ownership – even when a philosophical acknowledgement need not be conditioned on rivalrousness or excludability. This reluctance is mostly based on one of two intuitions: Either one assumes that personal data is a *res communes omnium*, a thing of the (entire) community, or a common heritage of humankind, or one assumes that personal data is a *res nullius*, nobody’s property. These make up two anti-ownership positions that deserve our attention: The former highlights how personal data are like facts – an entity that should be a public resource and not to be appropriated, while the latter views personal data as resembling memories and feelings – something that constitutes us rather than something we own in any legal sense. Yet both positions lead us to some unwanted conclusions.

The “common good” position

In the former position, which we may call the “common-good” position, one views personal data as facts and as closely linked to free speech. When data is an information/fact-bearing entity, it should enjoy the same possibilities to flow, inform people, and remain a shared human good:

[D]ata is not ownable, at least under US law jurisdictions. You can’t own data. You can’t own the news of the day. We’ve known that since the early 20th century... as long as we consent to the extraction of my cells or my blood or my saliva, whatever it is, then we think that whatever information you can conclude about it is not owned by anybody. (McGuire et al., 2019)

Ownership talk, in this view, does not encourage a solidaric or utility-maximizing attitude to data sharing, but implies that somebody can control data (and the potential information it bears), exclude others, and obstruct its use for knowledge and service production. Ownership risk creating a *tragedy of enclosure* (Monbiot, 1994), (as opposed to *the tragedy of the Commons* (Hardin, 1968)), in a process where the rich and powerful can exercise political and economic power in order to take over resources that ought to be public and shared (Mishori, 2014):

[N]ew types of enclosures are often caused, in part, by the ability of new technologies to capture resources that were previously unowned, unmanaged, and thus, unprotected. This is the case with outer space, the electromagnetic spectrum, and, of course, with digital information (Hess & Ostrom, 2006).

The intuition underlying this position is that personal data is a common heritage of humankind, belonging to the entire community rather than any individual. It implies that data should be freely accessible and shared among all members of society, reflecting a collective ownership model. Yet, the problem with this position is that it remains unclear how we are to interpret the normative implication of the argument. Are we obligated to share our health data? And if so, how much, and with whom? If we really are to get conceptually closer to the view of data as a common good and unownable, then one could even argue that *all* ought to contribute with their health data, bypassing questions of consent, as it could imply that someone already owns it and can exclude others (Harris, 2005).

But a forced data sharing regime would not fit well with other liberal ideals, such as autonomy and privacy. Ought we really to conceptualize personal data as a common good – and in effect leave people with *no* moral ownership over *any* personal data?

The “non-alienability” position

The other anti-property position, which we may call the “non-alienability” position, places emphasis on the relation between the data subject and personal data as opposed to the solidaric or utilitarian argument we saw above. Defenders of the non-alienability position compare personal data to *feelings* and *memories*. Such entities are not “mine” in the sense that we own them, but “mine” in the sense that they are parts of me:

‘Your’ in ‘your information’ is not the same ‘your’ as in ‘your car’ but rather the same ‘your’ as in ‘your body’, ‘your feelings’, ‘your memories’, ‘your ideas’, ‘your choices’, and so forth. It expresses a sense of constitutive belonging, not of external ownership, a sense in which your body, your feelings, and your information are part of you but are not your (legal) possessions. (Floridi, 2014, p. 121)

The intuition underlying this position is that personal data is so ingrained with our person that ownership is too external to capture this relation. Just like we do not own our memories, we also do not own our personal data. To call such constitutive entities ‘property’ would be to confuse property rights with personality rights, and would consequently loosen, rather than tighten, the bond between data subjects and their personal data. For instance, Henry Pearce distinguishes between *property rights* and *personality rights* and holds that property rights “are alienable and transferable. Accordingly, they are a form of rights that exist independently of an individual’s personality” (Pearce, 2018). Property rights can be sold, inherited, or otherwise exchanged independently of the individual. In contrast, personality rights are fundamentally tied to the individual: They “come into being when an individual is born, cease to exist when the individual dies, cannot exist independently of an individual’s personality, and are thus inalienable and non-transferable.” (Pearce, 2018).

The infringement of personality rights primarily results in personality harm, a nonpecuniary loss or damage, that cannot be calculated in money by way of reference to a market value (Pearce, 2018). It encompasses aspects like right to privacy, right to one’s image, and protection of personal reputation – rights that protect non-material dimensions of a person and cannot be separated from their identity. According to Pearce, it is crucial to recognize a sharp distinction between

property and personality rights because the distinction clarifies what entities we can *alienate* (transfer) and what is *inalienable* (non-transferable).

Those who subscribe to the idea that personal data is an inalienable entity usually highlight how personal data relates to our personality and dignity. Hence, we ought not to incentivize anyone to part with it, because it could allow others to take ownership of people's identities, as the putative owner cannot exclude the individual's demands on these data "unless he/she neglects the individual's identity in the first place" (Janeček, 2018). In other words, it is argued that if protection of personal information is necessary for the protection of our dignity and personality, then property rights are unsuitable as a protective device, as they can *encourage* transfer: If the market in personal data is the problem, then "[m]arket solutions based on a property rights model won't cure it; they'll only legitimize it" (Litman, 1999, p. 1295). The ownership strategy can thus backfire and alienate us from our personal data, because, as Jessica Liman argues, "the *raison d'être* of property is alienability; the purpose of property laws is to prescribe the conditions for transfer" (Litman, 1999, p. 1295).

But an issue with this anti-ownership argument is that it also leaves us hesitant regarding how strictly this should be interpreted. We do, after all, hand over a lot of information about ourselves for comfort, convenience, safety, and other benefits. Are we to interpret the argument as opposing *all* kinds of transfer and use? Surely, it is primarily the marketization and commodification that is being frowned upon here. Hence, the type of inalienability this camp is advocating must, in other words, be limited to *market-inalienability*, not *full inalienability*, as one still needs to conceive of data as tradable and giftable, i.e. *alienable*.

Conceptualizing data as ownable

Personal data – including intimate data, such as reproductive health data – are in many ways alienable, at least as of today: We can part with, sell, use, and gift our data, in exchange for free, personalized and effective digital services, and such data trade is likely to continue to grow in scale and worth. Many of these transactions are harmless and enhanced data mobility is doing a lot of good, like "improving healthcare, thereby reducing costs, democratizing health access, and saving valuable human lives" (Shafqat et al., 2020). Do we really need to tie valuable data to their data subject when it might risk hampering research and development?

Sometimes we have good reasons to do just that. While individual pieces of data might seem insignificant, when aggregated, they can form detailed personal profiles that reveal more about you than you might be comfortable with. This aggregation creates a power imbalance, allowing data holders to convert data power into economic, political, and other forms of influence (Véliz, 2021, p. 53). And the ability to predict and manipulate behavior through personal data is a defining power in the digital age (Véliz, 2021, p. 53). Moreover, the current "notify-and-consent" model for data collection does not account for the varying sensitivity of different types of data, treating all data as uniformly flat and unremarkable (Lupton, 2016, p. 449). As a result, individuals often rely on the goodwill of commercial entities to protect their privacy, lacking control over where their data is stored, what data is collected, who can access it, and how it will be used. Research consistently shows that people rarely fully understand what they are consenting to, and privacy policies are often too lengthy and complex for users to read and comprehend when

consent is requested (Cranor, 2012; Milne et al., 2006; Reidenberg et al., 2015; Waldman, 2020).

Can we move beyond the fixation on data control, that leaves data subjects constantly chasing and worrying about their privacy, and towards the acknowledgement of moral ownership in personal data? As demonstrated above, some are skeptical to ownership talk regarding personal data. It may undermine data solidarity and promote ideas of trade and sale. Moreover, property is mostly accumulated by the rich and well-off, and property protection often works to protect some more fortunate people against the justice claims of the less fortunate. Private property has even been called theft and robbery (Malabou, 2023; Proudhon, 1994) and it is, therefore, perhaps not so strange that those who seek to protect our privacy and personal data from capitalist forces do not directly jump to ownership.

Yet, the idea of ownership encompasses norms regarding property treatment that can be fruitful for our purpose – although perhaps not a ‘once and for all’ solution. Moreover, there are theories that get us there. We will consider three such theories: the *bundle theory*, the *Lockean ownership theory*, and the *personhood theory*. We start out with the bundle theory.

Quasi-ownership – the bundle theory

If we take a pragmatic approach to ownership, the so-called *bundle theory* lets us bypass many of the questions we have grappled with so far, such as scope, justification and who the rightful owner should be. “Bundle” refers to the lack of any “pre-existing, well defined and integrated concept of property that guides – or should guide – our understanding of property-entitlements” (Breakey, 2013). The property that a person holds in any given instance is simply the sum total of the particular entitlements the law grants to her in the situation. If several people have property-entitlements in one resource, it is meaningless to try to determine who the *real* owner is; “each person simply has the entitlements the law grants to them” (Breakey, 2013).

Hence, the “Bundle Theory is not so much a property-concept as it is the idea that ‘property’ is not really a proper concept at all” (Breakey, 2013). It is merely a bundle of entitlements, granted by the law, but without philosophical justification to answer questions of *how* and *why*. In the bundle theory, as articulated by Hugh Breakey, we find a list of elements that together constitute what is known as *full liberal ownership* (Becker, 1980; Honore, 1961), including rights to possess, use, manage, benefit from, consume or destroy, modify, alienate, transmit, keep, duty to prevent harmful use, etc. But such ‘full’ ownership rarely, if ever, gets instantiated in the real world. Thus, ascriptions of ownership could be analyzed as including and combining just some of the elements in a way that only make up a mere ‘quasi’ ownership.

Quasi-ownership would primarily seek to put individuals in a position to distribute, retract, shield, but also share their data for a variety of purposes, including but not limited to personalized medicine, algorithmic applications, biomedical research, and their own clinical care within a patient-centred health system. In other words: what is initially framed as data ownership concerns primarily *controllability*, i.e. the availability of effective means for data subjects to exercise control over her data. (Hummel et al., 2020)

The quasi-ownership approach to personal data is persuasive as it aligns with regulations such as the GDPR and with ideas of individual data stewardship and controllability. Moreover, if we understand ownership merely as *controllability*, then we might be inclined to say that we already enjoy (quasi) data ownership – at least in countries covered by the GDPR. GDPR aims to strengthen the data subject’s “control over his or her own data” and the “data subjects’ default ownership of their personal data” (Regulation (EU) 2016/679, 2016, Recital 68), by having rights to access (Art. 15), erasure (Art. 17), and data portability (Art. 20).

Following the bundle theory, property owners are expected to have some level of three types of entitlements; *exclusion* (others may not enter or use the resource), *use* (the owner is free to use and consume the resource), and *management* or *alienation* (the owner is free to manage, sell, gift, bequeath or abandon the resource) (Breakey, 2013). The three-part approach opens for weaker types of ownership, provided they contain some threshold amount of these three elements.

Settling for mere quasi-ownership in our personal data is attractive as it dodges many philosophical and juridical problems. But considering again the case of reproductive health data, it does not seem to suffice. First of all, the bundle approach is a mere pragmatic solution that lacks moral foundation and theoretical weight. It does not answer questions of what, why and when our data ought to be protected. Second, adhering to the bundle theory would not change the current data collection practice, as it would only legitimate the “notice-and-consent”-approach we find ourselves in today and not grant people any additional protection. Can the *Lockean theory of ownership* prove more fruitful?

Full ownership – the Lockean theory of ownership

The Lockean theory of ownership offers a more substantial answer to questions regarding why we ought to peruse a property system and what makes it legitimate. John Locke argued that there is a natural relation between particular things and particular persons – natural in the sense that such a relation could be established in the absence of any state and legal property system. He holds that the relation can come about through a specific act that extends the self-ownership inherent to personhood into an object.

The relevant act, says Locke, is *labor*, and by mixing labor with resources, we have a justified initial acquisition to claim it a private property (Locke, 2013). In this theory, property and ownership are given a detailed and comprehensive meaning, encompassing full rights to use, exclude and alienate the property. The theory has gained a hegemonic position in western countries, due to its intuitive appeal. Locke’s simple thought of granting people the fruit of their own labor seems fair and has helped establish ownership in a variety of intangible things with “unownable” traits.

For Locke, the justification and delineation of private property is connected to a specific, negative notion of freedom. This means that freedom is understood to exist for the individual only in absence of interference and can only exist – in its fullest sense – in the private sphere, where we are free to do as we please, and where we are not restrained by norms and judgements from others. The private sphere is in other words the vessel for freedom, and as such, private property must be considered a fundamental right.

Thus, Locke instated a now well-established idea inherent in liberalist thinking that places freedom with the act of appropriation. Without possibilities for

acquiring control over particular bits of the natural world, and exclude others from it, we have no self-ownership (Kernohan, 1988). Executing our self-ownership necessitates property, and property ensures our freedom. Still, the right to appropriation is not unlimited: According to the Lockean proviso, one must leave “as much and as good” for others to appropriate too for the system to be morally acceptable (Nozick, 1974, p. 178). But other than that, Locke does not give much advice regarding what we can and what we should not appropriate. It seems that anything that can be labored can support a property interest.

This seems to be good news for our personal data. As personal data do not come into existence on its own, we can simply look for the constructor, and *voilà!* But, if labor is the crucial point, then the Lockean account of self-ownership and its extension into objects seem to support data ownership interest by *others* – not by the data subjects. This is due to the fact that personal data, more often than not, is formed by or in relationship with others (Montgomery, 2017, p. 83). While the individual body provides the raw matter for datafication, it is not clear that the data subject labors their data into existence. Most personal data is made by state institutions, service suppliers, insurance companies, retail stores, etc., and hence it does not follow that the data subject can claim ownership of it. As Jonathan Montgomery points out, the basis for such claims erodes rapidly when we ask, “First, what have I *done* to deserve it? (...) Second: what have *I* done to deserve it?” (Montgomery, 2017, p. 83). In cases like the data in our health records, “[i]f anyone may claim proprietary rights over the information on the labor theory of property, it would seem to be the health professionals or service for which they work” (Montgomery, 2017, p. 84). So, even if we grant that data supports an ownership interest, the labor theory does not seem to point to the data subject as the rightful owner.

The personhood perspective

As sketched out, reproductive health data are sensitive and intimately connected to our identity, dignity, and self-determination. In some cases, like in the PFTAs, data work as an extension of the self that promote personal choice and self-knowledge (Lupton, 2016). At the same time, personal data can create vulnerability and weaken autonomy when “on the loose”. To *not* establish a special claim to reproductive health data, seems to go against our moral intuition regarding where such data belong. And, as mentioned, being skeptical about the idea of personal data as private property does not mean that we cannot conceive of personal data as property *at all*. There are several thinkers who have made this argument, most famously perhaps, the philosopher G. W. F. Hegel, who developed the so-called *personhood theory* of ownership. He starts off his theory by unpacking the *personhood* concept, which is to inform his alternative ownership theory and tease out the personal and intimate relation that exists between people and certain things around them.

To be a person, says Hegel, an individual needs some control over a space or resource in the external environment (Hegel, 2015, §41). A person is, in other words, not primarily characterized by being a member of the human species. Rather, a person is constituted in relation to others, the world of things around us, and how we view ourselves. These relations are always mediated by society and concepts of ownership. You cannot own *persons*, but you can own *things*. Yet,

paradoxically, in line with Locke's claim, you can own yourself – i.e., your body and mind. You do not own your body in the sense that it is a fungible commodity, but in the sense that it is an embodiment of your personhood. And thus “the body is quintessentially personal property because it is literally constitutive of one's personhood” (Radin, 1982, p. 966).

Similar to our bodies, some things can also be so personal that it does not seem right to conceive or treat them as fungible commodities. A family heirloom or a personal diary can challenge the boundary between us and things, because our sense of self and future plans may encompass personal belongings. This insight makes up the starting point for Hegel's ownership theory and emphasizes how people's lives are, to a lesser or greater degree, bound up with things, for all kinds of purposes, allowing for the establishment and development of our personhood. To that aim, some things are fungible and exchangeable, while other things play a more constitutive role. A family home, for instance, might play a constitutive role for someone's personhood, while a piece of clothing might be more trivial and exchangeable.

The concept of ‘person’ is controversial, and when we say ‘constitutive’, it might sound like we are making a claim about what is necessary or sufficient conditions for being morally recognized as a person. That is, however, not our aim. We are concerned with conditions for personhood in our practical social lives and how ownership relates to personhood, especially in our development as persons of self-determination. In this agency-account of personhood, property rights in general are taken to be *abstract* rights, meaning that they are not premised on particular acts or a state (Hegel, 2015). An abstract right is a fundamental condition for having agency in the world because we cannot exercise our freedom without the means to appropriate things and work our will through them (Hegel, 2015, §41). The notion of rights – autonomy or freedom in the positive sense – is logically bound up with entitlement to external objects.

Personhood development and individual freedom is thus conditioned by the connection to – and separation from – the physical and social environment. But an assessment of when personhood is fostered or diminished will further rely on the “thickness” of one's conception of persons: in the thinnest conception of personhood, little is conceived of as intrinsic to persons except the bare undifferentiated free will. Capacities, relationships, and attributes of character are conceived of as outside the self and thus alienable objects. On the opposite extreme we find the thickest conception of personhood, where much of the social and material context is postulated as inside the self, inseparable from the person (Radin, 2001, p. 62). Thus, to position oneself, as we do, somewhere in the middle, means to conceive of personhood as more than bare undifferentiated free will (context-transcended), but also less than wholly made up by its surroundings (context-embedded).

Constitutive ownership

We can observe that the personhood ownership justification starts out from a very different question than the one posed by Locke: Instead of asking what act of creation is relevant to constitute an ownership relation, we can consider what would remain of our personhood if we were *denied* ownership (Hegel, 2015). As bodily beings, objects and resources are indispensable to subsist, to externalize and

exercise our will, to create and express our identity, and to connect with the world around us. Thus, while objects may start out as external, they may not remain so: they can become constitutive of personality. And since personality is inalienable, one can argue that a property becomes inalienable once personality is invested in it and constituted through it. This does not mean that the more things we relate to, the greater our personhood. Neither should one interpret this to mean that the absence of constitutive things, like a home, would make someone less of a person. The personhood term is more related to a particular political conception of freedom rather than to social status and encompasses capacities and relations that are established between persons.

Thus, my ownership of property is not determined by me alone, but socially mediated and determined “within the context of a common will” shared among persons (Hegel, 2015, §71). This kind of mutual recognition becomes a vehicle for developing a more concrete understanding of freedom as a right in the world. In her seminal article *Property and Personhood*, Margaret Radin develops a “liberal property theory that focuses on personal embodiment or self-constitution in terms of ‘things’” (Radin, 1982, p. 958). This implies “to pay attention to resources, distributional principles, institutional structures, and the facts of personality development that make a good human life possible” (Radin, 2001, p. 63). A society can *foster* personhood, e.g. by forbidding the practice of slavery, or it can diminish personhood by accepting it. Likewise, it can foster personhood by recognizing the intimate and personal bond between people and their reproductive health data or diminish personhood by ignoring it.

To protect and promote the possibility of persons’ development of personhood involves evaluating what things are fungible (interchangeable) versus non-fungible (constitutive) to our personhood. If a thing is highly ingrained with our personhood, it ought to be treated as a personal property. But how do we single out relations to objects that are constitutive of personhood? To answer this question Radin starts with the Marxian distinction between things that are labored on with the intention to remain bound up with one’s own life, and things that one intends to use to make exchanges with others. She points out that this distinction is similar to the Hohhouse distinction between property for *use* and property for *power* (Radin, 1982). Here, a stronger moral claim is attributed to property that affords empowerment in one’s own life versus property that affords power over other people’s lives. In other words, the strength of the entitlement we have to a thing will move on a continuum from fungible to personal. The more closely connected with personhood, the stronger the entitlement.

But the opportunity to display personhood through things can make us prey of overexaggerating this relation. We risk investing ourselves in the wrong way and end up holding a fetishized relation to things. In such cases, one might attain and increase one’s liberty, but not one’s personhood. If we invest ourselves in the wrong way or to too great an extent, then property is not an aid for personhood-constitution, but a hindrance, as “anyone who lives only for material objects is considered not to be a well-developed person, but rather to be lacking some important attribute of humanity” (Radin, 1982, p. 961). This problem of ‘fetishism’ emphasizes the moral aspects of our relation to things, which is lost if we look at mere economic or legal aspects of ownership. To bind ourselves up with things in a “healthy” way, we need to be able to separate between how things are fostering our personhood and how they are not (Radin, 1982, p. 969).

While we ought not be too immersed in external objects or authorities (Hegel, 2015, §26), we should also avoid abandoning all thing-relations, thus leaving *oneself* ownerless. We should, in other words, not alienate our *personhood*, because that would imply that we do not own ourselves. This, then, seems to place us in the “non-alienability” camp that emphasizes the relation between people and their data. But within the framework of the personhood theory of ownership, it does not follow that *all* personal data are inalienable, that *all* forms of alienation are problematic, or that constitutive objects are *unownable*.

Reproductive health data as personal property

Data, regardless of sensitivity level, are alienable (transferrable) entities – for good and bad. *Good* in the sense that they can afford vital information back to the data subject and develop our personhood. *Bad* in the sense that we can become too invested or too careless about our personal data – both with the prospect of being damaging for our personhood. Reproductive health data – like most data – can shift hands and be translated into power. But being such a particularly intimate and personal entity, we ought to settle the limits to this.

PFTAs gather intensely personal information, yet has fallen into an ethical grey zone, where consumers are increasingly “relying upon them, and yet they don’t have the kinds of protections that they would have when sharing information with their doctors” (Cox, 2022). What should be clear is that these data cannot be treated as unownable entities. They are neither *res nullius* or *res communes omnium*, because that would mean that our intimate life is not ours, at least not in the way that we expect, want, and deserve (Citron, 2022, p. 31). But ownership theories that do not consider relations to personhood, such as the labor theory or other rivalling act-conditioned ownership theories, will miss the mark. A focus on the relation between reproductive health data and personhood will, however, have better success in this respect, because it teases out what is important in the relation between people and their reproductive health data, which is not labor, but rather dignity, integrity, and the opportunity for self-determination.

A moral ownership claim to reproductive health data involves facilitating freedom and self-determination by granting the individual the possibility to develop a more immediate and personal connection to their data. But any conception of freedom comes attached to a particular enabling context. A person cannot be an entity exercising free will if the person is simultaneously a manipulable object of monetizable value. Hence, the relationship between freedom and its enabling context requires, if freedom is to be realized, a positive commitment to particular contexts. What commitments are needed to realize freedom in relation to others and society in the context of reproductive health apps?

Firstly, sensitive personal data like reproductive health data should not be freely commodified or marketized but recognized as personal property of the data subject, because losing control of that data can go against their dignity and self-determination. Secondly, individuals should have access to these data to learn about their bodies and themselves and reap the potential for self-development and self-determination in that interaction.

Concluding remarks

Today, we are enmeshed with an interconnected online environment, including IoT and online collaboration. As intensely personal aspects of our lives are being datafied, we argue that we need to settle basic questions about who holds moral claims to our sensitive data. Moreover, we have made the case that the personhood ownership theory is the one that best recognizes the special relation between people and personal data, like menstruation and other sensitive reproductive health data. To enable individuals to form stable relationships to such data – to enhance personhood and avoid outside manipulation of the constitutive life project of the individual – the relation should be one of ownership.

For people to be treated as free individuals – as *persons* – we need, as a society, to recognize that such data is the personal property of data subjects. PFTAs are powerful tools for people who menstruate and create a relation where caring for the self is inextricably linked to their devices and data, as it helps shed light on the workings of the body and the self. As such, these data are intimately connected to personhood and self-determination and thus cannot be appropriated by others without violating the ownership claim of the data subject. As long as that data is vital to the integrity and development of a person, and gives control over one's own life, without diminishing other people's control over their lives, an ownership claim is justified.

Unownability cannot be applied to all data: not all personal data should be treated as a common good, and not all data can be viewed as inalienable. Some data are inherently private and intimate, like data about contraceptive methods and pregnancies. The privacy or *intimacy* of these data is not merely determined by the fact that they relate to our sexuality, reproductive capacities or bodily facts. Intimacy exposes us, and renders us vulnerable – features we are “disposed to hide, which give insight into how we see ourselves” (Gunkel, 2024). Are we likely to hide our reproductive health data, and feel psychological discomfort if it is exposed to a general audience? Are we likely to think that reproductive health data represents important features of who we are? If the answer to these questions is most likely to be “yes”, then there seem to be something morally objectionable about approaching reproductive health data as an unownable resource.

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