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# Time Matters: Flexi-time and women's retention in the 24/7 workplace

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**Abstract.** Historically, the ability to exercise agency over the scheduling of working-time has shaped women's retention in the workforce. Therefore, policies such as flexi-time, that claim to give employees control over the scheduling of working hours, should be beneficial to the retention of women in paid employment. The digitally-mediated service sector is considered family-friendly partly because of the rhetoric that work can be carried out anytime, anywhere. Literature in the CSCW tradition has focused on the design and use of technology to facilitate collaboration. The issue of how workers' agency over the scheduling of working-time plays out in practice and its implications for workforce participation have not been explored. I argue that flexitime is a situated practice embedded in a complex adaptive socio-technical system. By studying time practices of women who have returned to work after maternity leave in the Indian software services sector using Rob Stones' strong structuration theory as a framework, I hope to contribute conceptually to the CSCW tradition by providing insights on the role of the agency of the worker in the processes that shape temporal patterns in collaborative work. These insights may be used to indicate possibilities for designs that enable greater worker agency over time.

## Introduction

The parameters of an ideal worker, particularly in jobs providing higher than average wages, job and income security and social protection, have historically been constructed based on the common characteristics of a man, who typically did not have domestic responsibilities. Thus, the ideal worker was expected to give precedence to the demands on his time made by his professional needs over his personal or domestic requirements (Acker, 1990; Ballakrishnen, 2018; De Neve, 2012; Hays, 1996; Hochschild, 1998; Stone, 2007). A key characteristic of this construction is that it is based on a sharp

demarcation between professional time and domestic/personal time. Historically, such a rigid demarcation has led to the exclusion of women from the workplace (Edgell, 2012; Stone, 2007; Kellerman, 1989). Exponential increases in the speed of computers and telecommunications and their use in the workplace has increased the possibility of blurring boundaries between professional time and personal time and led to claims of creating family-friendly work.<sup>1</sup> These claims are especially strong in the digitally-mediated service sectors.<sup>2</sup> Central to the claim is the argument that the use of ubiquitous technologies, that can help in accessing information anytime and from anywhere and therefore give the worker flexibility of time and place in the delivery of digital services, has made work family-friendly. Following the same argument, flexi-time policies in digitally-mediated service industries, have been articulated as a measure to make the workplace more inclusive of workers with non-work demands on their time. I define flexi-time as “a working time arrangement in which employees can choose their preferred work schedule i.e. starting and finishing times of work each day within specified limits” (Messenger, 2018, pp.17-18). Employers often grant flexibility in working-time schedules to retain valued workers who desire greater control over the scheduling of their working-time (Kalleberg and Epstein, 2001).

Women with domestic responsibilities, particularly those with young children, are commonly considered as targets of such policies. Much like the “situatedness” of the notion of the ideal worker that is based on “specific qualities, knowledge, skills, personal conduct and behaviour that characterize an ideal employee in a particular work organization and cultural context” (Peterson et al., 2017, pp.56) there is also a culturally shaped ideal typical construct of motherhood. Sharon Hays coined the term “intensive mothering” to describe the historically constructed ideology of appropriate mothering that “advises mothers to expend a tremendous amount of time, energy and money in raising their children” (Hays, 1996, pp. xi). She argues that while the ideology of intensive mothering that expects selfless love and care from the mother is at odds with the competitive ideology of the market that presupposes that an individual is guided by self-interest, the ideology of intensive mothering is subscribed to as much by working mothers as by stay-at-home mothers (Hays, 1996). Blair-Loy (2003) in her study of women executives in America uses the term “family-devotion schema” to describe the cultural model that is based on the notion of “intensive-mothering” i.e. mothers should spend a lot of time with their children (Blair-Loy, 2003). In her study based on in-depth interviews with forty employed mothers Karen Christopher finds that mothers navigate the “intensive mother” and “ideal worker” ideologies by constructing scripts of “extensive” mothering which involves “delegating caregiving tasks while remaining ultimately responsible for children” (Christopher, 2012, pp.91). An analysis of accounts of 24 middle and upper middle class African American mothers employed in professional careers points to how shared histories and cultural expectations can shape ideologies of mothering – these mothers assumed that they should work outside of the home, be self-reliant, and use kin and community members as child caregiver, an ideology the author terms as “integrated mothering” (Dow, 2016, pp.180). Thus, given the time demands of a professional career, the strategies that mothers adopt to manage time to ensure that the needs of their children are met is culturally shaped. A recent study of Italian and British mothers who

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<sup>1</sup> In this paper, for the purpose of brevity, I use the term work to denote paid employment unless otherwise specified

<sup>2</sup> By digitally-mediated services, I refer to services that can be delivered digitally. This excludes work that is mediated digitally but delivered physically for e.g. location-based services enabled by digital platforms such as Ola, UrbanClap etc.

are experiencing low or reduced incomes suggests that intensive mothering discourses still dominate European and American parenting cultures (Cappellini and Harman, 2019). While there are studies that point to how fathers have also increased the amount of time doing childcare, there are also studies that point to how mothers are almost always present when fathers are with their children (Palladino, 2014). Moreover, mothers usually perform childcare tasks that have to be done on schedule (e.g. feeding, dressing, transporting) while fathers engage in tasks that can be more irregular and time flexible (e.g. playing, reading) (Craig, 2006). All these accounts, largely from the U.S., point to the nature and strategies of allocation of time as a crucial aspect of the construction of “motherhood” and of the negotiation between the roles of the “ideal worker” and the “ideal mother”. Additionally, there is also evidence to show that the pressure to negotiate between these two roles can shape women’s career ambitions (Meeussen and Laar, 2018). According to a World Bank study, women in urban India with at least one child under the age of six have a reduced likelihood of being employed (Das and Žumbytė, 2017).

I choose to look at how digitally enabled flexi-time that claims to give the worker control over the scheduling of her working-time, gives her agency in negotiating formal and informal rules determining working-time and how this agency shapes her retention in the workforce after maternity. The term agency has been used in varied senses. I draw on Naila Kabeer to understand agency as the “ability to define one’s goals and act upon them” (Kabeer, 2001, pp. 21). Agency is exercised when individuals are able to choose between alternatives and act upon their choices, this action having significant consequences for their lives. Agency is therefore exercised when human beings have the “capability” to act upon their intentions (Giddens, 1984). The particular case that I focus on is that of women engineers in the software services sector in India – a digitally-mediated sector that provides higher than average wages, job and income security and social protection.

Digitally enabled flexi-time is a computer supported collaborative temporal working arrangement. There is a sizeable literature in the Computer-Supported Cooperative Work (CSCW) tradition that takes into consideration the temporal aspects of collaboration in the design of technology meant to enable collaborative work (Edwards and Mynatt, 1997; Palen, 1999; Hudson et al., 2002; Fisher and Dourish, 2004). There is literature that has looked specifically at how to design digitally enabled systems for distributed work that makes cooperation possible between workers located at different places and/or with different time schedules (Ambe et al., 2016; Hinds et al., 2015; Dangelmaier et al., 1997).<sup>4</sup> A majority of this work has considered a smoother collaboration between workers as the end goal of the design of systems. There is also literature that specifically talks about socio-cultural aspects of collaborative work such as power differences based on geographical location (Hinds et al., 2015 ; Matthiesen et al., 2014) homophily leading to better task completion rates (Kandappu et al., 2017), relation of deep level diversity with creativity in virtual ideation teams (Ye and Robert. Jr, 2017), trust issues in distributed teams (Duysburgh et al., 2014; Robert Jr., 2016) etc. In recent times the CSCW community has encouraged discussions on the need to incorporate feminist approaches in

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<sup>3</sup> In India corporate managers, professionals and associate professionals receive wages which are 1.9 to 4.3 times higher than average earnings (ILO, 2018). For my research I consider software development work as providing higher than average wages, job and income security and social protection (ILO, 2018).

<sup>4</sup> The references mentioned are not exhaustive as the literature is too extensive to be accommodated here. I have cited relevant work in the CSCW tradition in the past 5 years.

computing (Fox et al., 2017; Steinhardt et al., 2015). Lindley (2015) has argued that technology can play a role in both “shaping temporal infrastructures and shifting reified temporal patterns” (Lindley, 2015, pp.1442). Making such temporal patterns visible can lead to “temporal reflexivity or the recognition that reified temporal patterns are flexible and changeable” (Lindley, 2015, pp.1448). Such an argument points to the scope for enabling agency to modify existing temporal structures. My study draws heavily on Lindley’s argument regarding the agency to modify existing temporal patterns.

I argue that there is a need to explore the role of digitally-mediated flexi-time in giving workers agency over working-time and therefore supporting the creation of a workforce that is inclusive of workers with non-work demands on their time. In understanding the implications of digitally-mediated flexi-time for the agency of individual workers it is pertinent, even within the CSCW tradition, to look beyond the design of technology. Ethnographic studies over the years have acknowledged that there is an asymmetry between the design of technology and the “situated and contingent unfolding of action” (Blomberg and Karasti, 2013, pp.376). Much of the work that looks at the design of technology as the ‘solution’ to social issues suffers from what Ackerman terms as the “social-technical gap” i.e. “the divide between what we know we must support socially and what we can support technically” (Ackerman, 2000, pp.179). This is because it is difficult to predict the vagaries and contingencies of human social activity and incorporate the same in the design of technology. A more useful approach would be to acknowledge that flexi-time is a situated practice that is embedded in a complex adaptive socio- technical system, which evolves through interaction of sub-systems (Kaplan and Seebeck, 2001). Insights regarding processes that occur in natural situations in this socio-technical system can contribute theoretically to CSCW research by providing an understanding of the processes that go into creating temporal patterns in work practices and the role of individual agency in these processes. These insights may then be used to “steer evolution” (Kaplan and Seebeck, 2001, pp.373) or suggest “general characteristics of potential technologies” (Kaplan and Seebeck, 2001) considering workers agency over working-time as an end goal. I argue that the strong structuration theory proposed by Rob Stones (2005) is a useful theoretical framework to study how women exercise agency over existing temporal structures through the practice of flexi-time.

This paper is structured as follows: In Section 1, I begin with a historical overview of the literature on women in paid employment to show how agency over the scheduling of working-time has shaped women’s participation in the workforce. I then invoke existing empirical studies and theoretical standpoints to argue for the importance of taking into consideration the issue of the agency of women. Next, I analyze existing studies on the nature of working-time in the software services sector focusing on how it shapes the experiences of women. I point to how literature on women’s participation in the workforce, including that on the Indian software services sector, often points to structural factors but does not give equal analytical weightage to the agency of women. Finally, I briefly discuss some of the insights from the literature on time and technology and argue for the need to recognize that temporal experiences are subjective and technological structures are emergent in human practice through the recursive interaction between agents and structures. I draw on Giddens (1984) work to conceptualize agents as reflexive, knowledgeable actors (Giddens, 1984). In Section 2, I discuss in detail the theoretical framework of “strong structuration” (Stones, 2005) arguing for why it is suitable for understanding the agency of women over working-time. In Section 3, I lay out my research methodology. In Section 4, I argue that flexi-time is a situated practice and it is the socio- technical context in which it is enacted that determines whether it gives agency to workers.

This socio-technical context may be characterized as a complex adaptive system that evolves through interactions between sub-systems and cannot be ‘forward engineered’ very easily. It is therefore necessary to look beyond the design of technology as a solution to provide workers with agency over working-time and instead try to understand processes that go into creating temporal structures through work practices and the role of individual agency in these processes. By describing how agency over working-time shapes the nature of workforce participation in digitally-mediated work, I hope to provide the grounds from which possibilities for design that encourages worker’s agency over working-time can be devised.

## Section 1: Related Literature

### Participation of women in the workforce

I begin my discussion with the factory system of mass production as it has been widely accepted as a period during which changes in the organization of work shaped the nature of women’s participation in the workforce. This system of production replaced the family wage with the wage for the individual worker and given the pre-existing patriarchal family structure established the male-breadwinner model of the family (Hartmann, 1976; Nicholas and Oxley, 1994). Optimistic perspectives on how the factory system of production shaped the participation of women in the workforce attribute a crucial role to technology. According to these accounts, the introduction of machinery reduced the need for physical strength and offered women more and better paid jobs than agriculture and domestic service (Nicholas and Oxley, 1994). Alternative perspectives suggest that it exacerbated job-segregation by sex and reduced the participation of women in paid employment (Hartmann, 1976). The women who did enter waged work in the factory system of production did so on “persistently less favourable terms than men” (Kabeer, 1994, pp.45). The exclusion of women from the sphere of paid employment on equal terms as men was exacerbated by the introduction of standard working hours. Women were actively engaged in earlier small-scale craft-based production systems where there was greater flexibility of time (Hartmann, 1976). With the introduction of standard working hours, the pre-existing sexual division of labour which associated women with domestic tasks and men with acts of production for the market, was extended to the wage labour system (Hartmann, 1976; Kellerman, 1989). Men’s time was used for the production of commercial products and services, while women’s time was associated with the creation and maintenance of lives and in related domestic services (Hartmann, 1976; Kellerman, 1989). Time was measured by the clock, recorded, interchangeable and had “exchange value”.<sup>5</sup> E. P Thompson, while describing the temporal structure of the industrial society characterized by the factory system of mass production, demarcates the temporality of women’s domestic work and the work of the mother of young children from that of the industrial worker. The women engaged in care work and domestic work, according to him, have not yet moved out of the pre-industrial sense of time and have an “imperfect” sense of clock time, attuning their schedule instead to other human needs (Thompson, 1967).

It has been argued that such gendering of working-time was aided by social sentiments against women especially married women, working outside the home (Hartmann, 1976). Marxist feminists,

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<sup>5</sup> Ratio at which a commodity exchanges against others is called exchange value (Jary and Jary, 2000, pp.663)

such as Mies, have propounded the idea of “capitalist patriarchy” which denotes “patriarchal civilization as a system, of which capitalism constitutes the most recent and most universal manifestation” (Kabeer, 1994, pp.50). The feminist theorist Joan Acker conceptualizes the gendered division of labour in terms of the gendered social differentiation between the production of material goods or commodities (considered as male domain) and the daily and intergenerational reproduction of people (considered as female domain) (Acker, 1992). This differentiation was evident from the common form of the capitalist workplace which did not integrate activities like childbirth, sleeping, eating and other daily maintenance activities within its boundaries (Acker, 1992). Even in cases where women did participate in the labour force, the gendered division of time persisted in the domestic division of labour where most women carried out a disproportionate share of household chores – what is referred to as “the second shift” (Hochschild and Machung, 1989). Thus, it may be argued that the standardization of working-time and the underlying forces of patriarchy were two critical factors that discouraged the participation of women in the industrial production labour force in equal numbers and on equal terms as men.

The transition from standardized mass production to flexible production was brought about by the crisis of productivity and the crisis of profitability of the Fordist system of production in the 1970s (Edgell, 2012). Flexible production involved the capacity to deploy or redeploy production resources, including labour, efficiently as required by changes in the environment (Duguay et al., 1997). The flexible system of production was characterized by promises of temporal self-determination i.e. the ability to divide and shape working-time in coordination and synchronization with other needs of life (Nowotny, 1994). Unlike standardized mass production, flexible production, in principle, appeared to give greater autonomy to workers to complete their tasks (Duguay et al., 1997). It was suggested that in systems of flexible production, the exchange between working-time and free time was no longer derived “from the linear and continuous working biography of the male employee” (Nowotny, 1994, pp.108) implying therefore that increased employee autonomy over working-time should encourage the greater participation of women in the labour force. Another strategy adopted to deal with the crisis of the Fordist system of production was internationalizing production by relocating it to countries with availability of lower wage labour (Edgell, 2012). These strategies were also adopted in the services sector where the introduction of digitally-mediated work reinforced claims of female-friendliness. I discuss the literature on women’s participation in the digitally-mediated service sector at some length because this sector is projected as particularly conducive to participation by women.

Central to arguments about the family-friendly (which because of the prevalent domestic division

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<sup>6</sup> The principle of control over employee’s time and its standardization are found in systems of mass production such as in scientific management and the Fordist principle of production. The principles of Scientific Management, devised by Frederick Winslow Taylor, were implemented in industrial production in America in the 1920s. To scientifically determine the optimum way to complete a task Taylor performed ‘Time Studies’ that involved the use of a stopwatch to time a worker’s sequence of motions with a goal to determine the one best way to perform a job. Thus, workers were given prescribed times within which they had to complete the tasks assigned to them. Henry Ford applied the principles of scientific management to automobile production. His employee policies reflected adherence to the male breadwinner model (Edgell, 2012, pp.97). He implemented a complex profit-sharing scheme divided into two components: a basic wage paid to all workers and a profit-sharing element that was only available to those who had worked for Ford for at least six months, married men “living with and taking good care of their families”, single men aged over 22 “who are of proved thrifty habits”, and young men under 22 and women “who are the sole support of their next of kin” (Edgell, 2012, pp. 92).

of labour became almost synonymous with female-friendly) nature of digitally-mediated work is the proposition that digital mediation has altered the organization of work, overcoming the “negative features of industrial capitalism” and creating a society “organized around knowledge and information in which creativity, equality and the prevalence of high-skilled knowledge work would replace alienated and exploited labour” (Sandoval, 2015, pp.42). While the factory system of production was based on the separation of the sphere of paid employment from the domestic sphere, digital mediation allows production to happen “anywhere” (Flecker, 2016, pp.1). According to post-industrial theory, working from home “offers the freedom of self-regulated work and a reintegration of work and personal life” which will lead to “more sharing of paid and unpaid domestic labour, as men and women spend more time at home together” (Wajcman, 1991, pp.40-41).

Research points to how flexible work arrangements are instrumental in achieving a healthy work and family balance (Felstead et al., 2002; Hill et al., 2010; Valk and Srinivasan, 2011). Work-life balance leads to greater employee retention (Downes and Koekemoer, 2011) particularly for women with domestic responsibilities (Cox et al., 2014; Srinivasan et al., 2013). By this argument, flexible work arrangements give rise to greater retention of women with domestic responsibilities. Literature also points to how work-family balance has been largely treated as a woman’s issue (more specifically married women) because of the perception that catering to the needs of the family is a woman’s responsibility (Smithson and Stokoe, 2005).

There is literature that counters the claim that digital mediation leads to greater work-life balance. The counter argument is that flexible work timings can lead to an encroachment of work into personal lives or what Melissa Greg refers to as ‘presence bleed’ (Greg, 2011) and does not necessarily lead to greater work– life balance (Downes and Koekemoer, 2011; Eldridge and Nisar, 2011 ; Whittle and Mueller, 2009). Digital mediation enables after hours telecommuting which can lead to longer working hours and reduced work-life balance (Duxbury et al.,1992). This is exacerbated by the 24/7 economy and its “demands for around the clock availability for labour market activity” (Presser, 2003, pp.1- pp.2). The 24/7 economy is shaped by the global capitalist relations of production that have expanded in reach with increase in the speed of communications technology. Additionally, the use of these communication technologies in the context of paid work has given rise to the "autonomy paradox" i.e. on the one hand it has enhanced the worker's sense of control over the timing and location of work while on the other hand it has led to workers using it everywhere/all the time thus reducing their autonomy in practice (Mazmanian et al., 2013). Both CSCW and Human-Computer Interaction (HCI) literature has focused on the role of digital interactive technologies in managing time and "mediating work/life tensions and boundaries, documenting the skilled use of digital tools, its collaborative aspects, and the assemblages of physical/digital resources in non-professional spheres such as volunteering and leisure as well as in professional domains" (Ciolfi and Lockley, 2018, pp.3). Research also points to the complexity of individual strategies, professional demands, and life situations in navigating work-life boundaries (Ciolfi and Lockley, 2018; Cousins and Robey, 2015; Sadler et al., 2006). Therefore, historically and in more recent narratives, agency over the scheduling of working-time and management of work life boundaries has played a central role in accounts on the nature of participation in the workforce. In the next section I cite historical instances of how workers have used informal means to exercise agency over working-time and argue for why particularly for women it is important to consider the issue of agency.

## Agency over working-time

Historically, there have been instances of workers' exercising agency in the face of temporal constraints, with implications for the nature of their participation in the workforce. For instance, to break the monotony of extra-long workdays for six days a week, a group of factory machine operatives resorted to "an ordered series of informal interactions"—some of them were verbally articulated by the group as coffee time, peach time, banana time etc. while others were not always verbally recognized such as window time, pick up time and other times used for horseplay (Roy, 1959, pp.161). These informal interactions increased the endurance of the workers to work in situations bereft of creative experience (Roy, 1959). Similarly, women with children working in small workshops in the Tiruppur garment cluster in South India, took up jobs close to their homes and used their informal relations with the workshop owner (they referred to him as their brother) to ensure that there was flexibility in their work schedules so that they could come home whenever required during the day to complete domestic chores (De Neve, 2012). Inability to exercise this agency would have led to them dropping out of the workforce. Through observations and interviews with mobile knowledge workers who engage in digitally-mediated work, Erickson and Jarrahi show how actors construct—either individually or collectively—"a bricolage of material, mental, social, and cultural resources to adapt to seamful situations and advance accordingly" thus revealing the "competence or ingenuity of actors" (Erickson and Jarrahi, 2016, pp. 1325). Thus, workers have displayed instances of agency over working-time, through informal means. It is important to recognize such informal means of exercising agency as they can have significant implications for workforce participation.

It is especially important to consider the question of agency of women to counter the traditional association of the feminine with "lack of free will" and "lack of capacity to live a self-sufficient life" (Hutchings, 2013, pp.16). Inability to take into consideration the analytical category of the agency of women has been viewed as a significant gap in the literature on innovation and regional learning which perpetuates the image of the innovator as a "disembodied ideal worker for whom work is primary and the demands of the family and personal life insignificant" (Al, 2018, pp.7). In the CSCW tradition, the issue of time has been addressed in the design of technology meant to enable collaborative work (Edwards and Mynatt, 1997; Palen, 1999; Hudson et al., 2002; Fisher and Dourish, 2004) and more specifically distributed work that makes cooperation possible between workers located at different places and/or with different time schedules (Ambe et al., 2016; Hinds et al., 2015; Dangelmaier et al., 1997). However, the gender identity of the user is not taken into consideration in these accounts. The feminist approach in CSCW, "catapulted by formative work in HCI" (Steinhardt et al., 2015, pp.304) suggests that the "ungendered construction of the user" (Bardzell and Bardzell, 2011, pp.678) or "abstract individuation" (Bardzell and Bardzell, 2011, pp.679) should be replaced by a recognition of the individual as being embodied in interpersonal, historical and physical context because abstract individuation denies the "agency and subjecthood" (Bardzell and Bardzell, 2011, pp.677) of the individual. This approach suggests that given that design is an intervention i.e. an intentional effort to bring about change, it has the potential to ensure that gender remains "a relevant axis of investigation" (Bardzell and Bardzell, 2011, pp.677). Writing about the history of feminism in India, Maitreyee Chaudhuri argues that agency is always "enacted within specific structures of constraints" and sometimes these structures do get "redefined" (Chaudhuri, 2012, pp.29). Her argument resonates with Anthony Giddens' proposition that all structural relations of dependence are sustained through similar social practices that "exist across varying spans of time and space" (Giddens, 1984, pp.17). These relations of dependence "offer some

resources whereby those who are subordinate can influence the activities of their superiors” (Giddens, 1984, pp.16). Individual agency may be exercised through everyday practices which can, in principle, bring about changes in structural relations.

In the next section I discuss the existing literature on the nature of working-time in the software services industry and its implications for women employees pointing to how analytically the issue of the agency of women has been understudied.

## Nature of working-time in the software services industry

Increases in the speed of computers and telecommunications, increased expectations for the immediate availability of products and services and the competitive nature of the global market (Orlikowski and Yates, 2002) have created pressures to reduce “time to market”, leading to the need to shorten project cycles which in turn lead to a demand for longer working hours (Shih, 2004). For instance, in Silicon Valley’s high-tech industry, working-time is unstructured and based on “project” time - employees are given a deadline and expected to reach it without being instructed on how to allocate time to complete it (Shih, 2004). Thus, while hours are flexible, they are also often very long and erratic.

In the software industry, the need to work for long hours is reinforced by equating number of hours worked with productivity. Frederick Brooks, writing about software engineering for large programs in 1975, mentions how the unit used in measuring the size of the job is man- month i.e. the product of the number of men and the number of months (Brooks, 1995). Perlow, studying software engineers in the U.S, who worked in cubicles and labs in their office and did not have the option to work from home, found that they spent excessively long hours at the office in order to meet their delivery deadlines (Perlow, 1995). Managers used number of hours worked as a criterion for ranking these engineers (Perlow, 1999).

There is work in the CSCW tradition that focuses on distributed teams (Dong et al., 2016; Duysburgh et al., 2014; Hinds et al., 2015; Robert Jr. 2016) and some that deal specifically with globally distributed teams engaged in software development (Ambe et al., 2016; Guzzi et al., 2015; Matthiesen et al., 2014) to name a few. In these studies, managing time has been treated as an important aspect of collaborative work and in some cases control over scheduling of working-time has been considered as a manifestation of power relations - for example, in globally distributed teams, "higher status sites, such as headquarters, or teams with high status individuals have more influence when negotiating times to meet" (Hinds et al., 2015, pp.865).

Like the literature on the global software services industry, the literature on the Indian software services industry also points to the centrality of time, both in terms of organizing the work and in the evaluation of its workers. Much like their global counterparts, the Indian software services firms bill clients based on hours or days of work (Upadhyia and Vasavi, 2006). Indian companies usually bid for projects in terms of man-days based on an eight-hour workday (Upadhyia and Vasavi, 2006). These predictions often underestimate the man-days required following which engineers are required to work much longer (Brooks, 1995; Upadhyia and Vasavi, 2006). Moreover, regardless of the accuracy of estimation, unexpected problems often crop up at the last minute and the entire team is usually expected to put in extra hours to solve them (Brooks, 1995; Upadhyia and Vasavi, 2006). Thus, not only are work hours long, they are unpredictable.

India has been termed as an “outpost” (Upadhyia and Vasavi, 2008) of the global software industry - an “enclave economy” that is closely linked to the global economy with few linkages to local, regional and national economies (Upadhyia and Vasavi, 2006). The Indian software services industry

draws the majority of its revenues from clients located outside India, predominantly the US.<sup>7</sup> Similar to any firm that is located in a time zone different from its client, interactions with the client may need to be carried out on the basis of the local time at the client's location which could be odd hours in India.<sup>8</sup> However, interactions with the client can be carried out via a virtual medium, thus not making it mandatory for the employee to be in her/his office.<sup>9</sup> This possibility for the decoupling of time and space, along with the possibilities for flexi-timing, has led to claims of the software services industry being a sector that enables “women to pursue a flexible career at their ‘critical biological stages’ and return to full time employment seamlessly” (Srinivasan et al. 2013). While such claims are not specific to India, how such claims play out in practice is determined by the political, economic and cultural background of the Indian context. In the next paragraph, I describe the time practices of the Indian software services industry as captured in existing literature and how it shapes the experiences of its women employees.

The Indian software services industry is characterized by the norm of long and uncertain working hours and frequent and unplanned travel (D’Mello, 2006; Peterson et al., 2017; Poster, 2008; Radhakrishnan, 2011; Upadhyaya and Vasavi, 2006) which contradicts the claims of flexi-time on the basis of which arguments are made about its female-friendly nature. While flexi-time, in theory, gives employees the freedom to choose their working hours, in practice it means that they have to work as long as necessary to finish the tasks at hand (Upadhyaya and Vasavi, 2006). Moreover, most companies usually have ‘core hours’ during which everyone must be in the office – a policy that further contributes to the long working hours (Upadhyaya and Vasavi, 2006). Thus, the time practices in the software services industry are not different from those of the factory system of production on account of two features - control over worker's time and the need to complete tasks within a stipulated time. However, unlike the factory system of production there is greater unpredictability about the length of daily working hours that the software engineers have to put in to complete the task in the stipulated time.

Women in the Indian software service industries work less hours than men (Upadhyaya and Vasavi, 2006). This is because married women have domestic responsibilities while un-married women face parental disapproval as well as occasional resentment from male colleagues, if they stay back after office hours (Upadhyaya and Vasavi, 2006). Women are often not allowed to work at night after business hours which becomes exclusionary when crucial meetings are held during this time in which women are not included (Poster, 2008).

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<sup>7</sup> According to data published by NASSCOM in 2018, 51% of industry revenues come from services. The predicted revenue from exports in 2019 is USD 135.9 billion while predicted domestic revenues are USD 41 billion. The report can be accessed at [https://www.nasscom.in/sites/default/files/Industry-Performance2018-19-and-what-lies-ahead\\_0.pdf](https://www.nasscom.in/sites/default/files/Industry-Performance2018-19-and-what-lies-ahead_0.pdf)

<sup>8</sup> The outsourcing of the software development process to different countries gives rise to what Robert Hassan terms as ‘network time’ or ‘connected a-synchronicity’ i.e. “breaking up the uniform and universal linearity of clock time into a billion different time contexts within the network” (Hassan, 2007, pp.51). India, as an outpost of the global software industry, is part of the time of this network. Hassan opines that “network time” is disrupting but has not yet displaced the all- pervasive clock time (Hassan, 2003).

<sup>9</sup> According to data published by NASSCOM in 2018, 51% of industry revenues come from services. The predicted revenue from exports in 2019 is USD 135.9 billion while predicted domestic revenues are USD 41 billion. The report can be accessed at [https://www.nasscom.in/sites/default/files/Industry-Performance2018-19-and-what-lies-ahead\\_0.pdf](https://www.nasscom.in/sites/default/files/Industry-Performance2018-19-and-what-lies-ahead_0.pdf)

<sup>9</sup> In some projects which involve sensitive data that cannot be accessed from home networks due to security issues, working from home is not an option.

Historically, middle class women have acted as "idealized markers of Indian national culture" and have been "a key mode" through which "modernity gets reconciled with a perceived authentic culture" (Radhakrishnan, 2011, pp.49). The new Indian middle class woman is exemplified by "upwardly mobile professional women" who "must simultaneously reinforce the values of the nation while legitimating the integration of the new cultural and economic influences of global capital" (Radhakrishnan, 2011, pp.50). This middle-class femininity, that Radhakrishnan refers to as "respectable femininity", emphasizes the role of the woman in preserving "good families" (Radhakrishnan, 2011, pp.50) which implies prioritizing family over professional work. Women, especially those with domestic responsibilities, working in the Indian software services sector are subject to these cultural expectations and the practices that they engage in must be analyzed in this context.

Women returning to work in the software services industry after a maternity break must negotiate between the time demands of the industry such as long working hours and frequent travel and the time demands of motherhood. A study based on interviews with employees from a large software service company in Chennai reveals that women with children prioritize their responsibilities towards their children over their work and career (Fuller and Narasimhan, 2008). The policy allowances that the IT industry makes for women with children makes the low percentages of women in upper management seem to be an outcome of choices made by women (Radhakrishnan, 2011). In practice however, the temporal expectations from the ideal worker in the software services industry remains intact and is therefore detrimental to the professional interests of its women employees, particularly those with domestic and caring responsibilities. For instance, women in the Indian IT industry who opt for flexi-time after childbirth "find themselves side-lined when it comes to promotions" and "individual managers may block the implementation of flexi-time in their teams due to the pressures of work and the discontent it creates amongst (male) team members who do not use flexi-time" (Bellappa, 2013, pp.117).<sup>10</sup> Even in the software sector in Silicon Valley where many companies have family-friendly policies,<sup>11</sup> there are reports of the prevalence of the norm of long and gruelling working hours.

Thus, existing literature points to how structures of working-time in the software services industry are not conducive to the participation of women with non-work responsibilities. Drawing on Giddens' concept of the dialectic of control that suggests that "all forms of dependence offer some resources whereby those who are subordinate can influence the activities of their superiors" (Giddens, 1984, pp.16), I argue that all structures are sustained through similar social practices and individuals engaging in those social practices help to sustain those structures. Therefore, analytically, there is a possibility for individuals to change social structures through their practices. I argue that this possibility has been underexplored in the existing literature. In the next section I argue for the need to study flexi-time as a situated practice to understand the question of the agency of women over working-time.

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<sup>10</sup> For details see <https://www.freeenterprise.com/silicon-valley-benefits/>, <https://qz.com/work/1568480/amazon-competitors-with-backup-childcare-google-facebook-apple-microsoft/>

<sup>11</sup> For details see <https://medium.com/@bobwyman/back-in-the-1970s-when-i-first-got-in-the-software-business-i-remember-there-being-a-much-higher-f70e8197fbd9>, <https://www.nytimes.com/2015/04/08/upshot/silicon-valley-perks-for-some-workers-struggles-for-parents.html>, <https://www.wired.com/2017/06/silicon-valley-still-doesnt-care-work-life-balance/>

## Flexi-time as a situated practice

Lucy Suchman argues that every action is "situated" i.e. it "depends in essential ways upon its material and social circumstances" and therefore should not be abstracted "away from its circumstances" and represented as a "rational plan" (Suchman, 1987, pp.50). The approach should rather be to "study how people use their circumstances to achieve intelligent action" (Suchman, 1987, pp.50). Drawing on her claim about the fundamentally situated nature of activity, Julian Orr through his study of the work of photocopy machine repairers shows how "service work" is "situated practice" (Orr, 1996, pp.10). A situated practice is an action that must be understood with reference to the situation of its doing (Orr, 1996). Policy and technology designed to manage time is often predicated on the notion of "circumscribed time" that does not recognize the situatedness of time practices and considers time as "chunkable, single-purpose, linear, and ownable" (Mazmanian et al., 2015, pp.1453). The problems with understanding time as an objective phenomenon that exists independently of human action and can be designed to regulate human action can be attributed to the vagaries of interpersonal relationships as well as the contingencies that arise when performing tasks according to pre-determined time schedules. Ethnographic data based on lived temporal experiences point to how time is subjective and "porous" (Mazmanian et al., 2015, pp.1453). For example, Barnett and Gareis (2000) found that long work hours are not universally distressing for individuals, and therefore using an absolute number of hours measure alone has limited utility in understanding human action as experiences of time are subjective (Dugan et al., 2012). Even within organizations and institutions that operate within the logic of "circumscribed" time, individuals adapt to the fluidities of time by resorting to informal means (Mazmanian et al., 2015). It may however be argued that time is not constructed completely through human action. While people play an active role in "shaping the temporal contours of their lives", their actions are also "shaped by structural conditions outside their immediate control" (Orlikowski and Yates, 2002, pp.684). Not all temporal experiences lend themselves to articulation or scheduling because they cannot be assessed due to external contingencies (e.g. travel time) or they cannot be anticipated (e.g. creative phases) (Mazmanian et al., 2015). It may be difficult to account for these temporal experiences in the design of technology structures. As Lindley argues, "efforts to design for temporal experience must do more than simply build desirable temporal models into technologies" - there is a need to address the broader practices of which these technologies are a part (Lindley, 2015, pp.1449). Moreover, I argue that there is a need to recognize that technology structures are "constituted recursively as humans regularly interact with certain properties of a technology and thus shape the set of rules and resources that serve to shape their interaction" (Orlikowski, 2000, pp.407). Technology structures are therefore emergent through situated practices and not embodied in technologies (Orlikowski, 2000). In the next section, I provide an outline of the theory of strong structuration highlighting why I consider it suitable to study the agency of women over working-time and its implications for their retention in the workforce

## Section 2: Theoretical Framework -The strong structuration theory

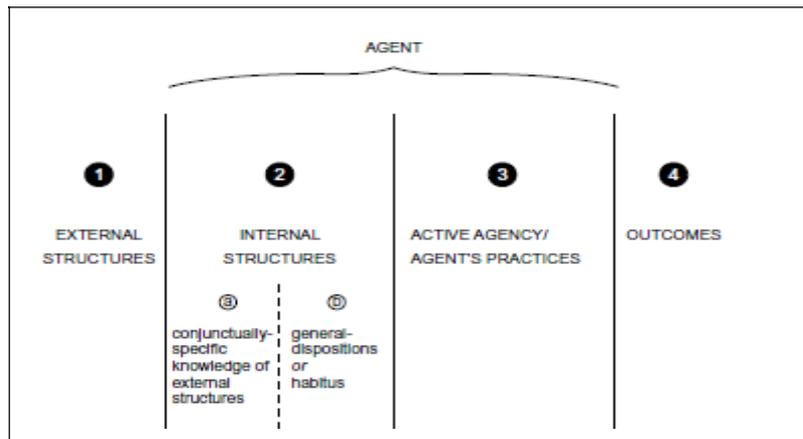


Figure 1: The quadripartite nature of structuration (Source: Stones, 2005, pp.85)

In understanding how flexi-time as a practice shapes women’s agency over working-time, I draw on Rob Stones’ strong structuration theory which builds on Anthony Giddens’ theory of structuration. Stones modifies Giddens’ concept of duality of structure. Giddens used the term 'duality of structure' to indicate the dual role of structure as both medium and outcome (Stones, 2005, pp.5) - “the structural properties of social systems are both medium and outcome of the practices they recursively organize” (Giddens, 1984, pp.25). Structures serve as the ‘medium’ of action as they provide, through memory, the bases upon which agents draw when they engage in social practices (Stones, 2005, pp.16). Stones proposes instead a quadripartite nature of structuration. This framework connects individual psychology to practice, with implications for structures and is more amenable to analysis of "specific processes involving structures and agents in particular, situated, contexts” (Stones, 2005, pp.13). One of the critiques of Giddens’ theory is that it considers structural power as a negotiable outcome of routine interactions whereas some forms of structural power may precede individual action and be relatively enduring (Jones and Karsten, 2008). This critique is relevant in the context of the history of women in paid employment which points to enduring structures such as patriarchy that have shaped women’s agency over working-time. Some basic features of patriarchy have endured. While Giddens does talk about constraints placed by the context of action on the range of choices available to individuals (Orlikowski, 2000) i.e. their agency, he does not explicitly link it to his conceptualization of structure. This criticism is also pertinent when considering the material features of technology. Giddens argues that structures do not have a material existence outside of human action, they exist only when instantiated in human action (Orlikowski, 2000; Jones and Karsten, 2008). Rob Stones argues instead that structuration involves both internal, virtual structures and external, objective structures, social action being always mediated by the former (Orlikowski, 2000). Ontologically, therefore, there is a distinction between a structure that

resides in a material artefact and a structure that is instantiated in action (Orlikowski, 2000). This conceptualization has significance for distinguishing between features of technology that are instantiated in practice and those that remain as external, objective structures – the latter forming a part of the context that places limits on the range of options available to actors. Some of the key theoretical concepts used by Stones are:

1. External Structures: these are conditions of actions that have an existence autonomous from the individual. These can exist at the abstract ontological level or at the “conjunctural level of particular participants” (Stones, 2005, pp.84).
2. Internal structures: exist within the agent and can be analytically separated into general dispositional structures or conjuncturally specific internal structures (Stones, 2005, pp.85).
3. Active agency: ways in which the agent either routinely and pre-reflectively or strategically and critically draws upon her internal structures (Stones, 2005, pp.85).
4. Outcomes: these could be external or internal structures or events. The effect of agents’ practices on structures could involve change or reproduction of existing structures (Stones, 2005, pp.85).

Stones’ theory of strong structuration provides a useful framework to understand agency as defined by Naila Kabeer. The notion of active agency is analytically aligned with the “intangible, cognitive processes of reflection and analysis” (Kabeer, 2001, pp.21) that Kabeer refers to in her understanding of agency. This conceptualization of agency is essential to understanding the processes through which women take decisions regarding their participation in the workforce. The situatedness of knowledge and action that informs my conceptualization of flexi-time as a situated practice is explicated in Stones’ use of the term ‘conjuncture’ in his framing of the notions of external structure and internal structure. The term conjuncture points to the specific circumstances of the actions of agents and others as well as the “bounds of agents’ knowledgeability in the shifting contexts of time and space” (Stones, 2005, pp.71). In the next section I describe my research method, justifying the use of the same in the context of my study.

## Section 3: Methodology

My primary research objective is to understand how flexi-time shapes the retention of women after a maternity leave in digitally-mediated work embedded in a 24/7 economy. I address this objective through the following sub-questions-

- a) How does flexi-time shape the agency of women over working-time in digitally- mediated work embedded in a 24/7 economy?
- b) How does this agency over working-time shape the retention of women after a maternity leave?

I focus specifically on the experiences of women who have returned to work after maternity leave in the software services sector in India and have at least one child below 6 years of age. There is research which shows that in urban India women with at least one child under the age of 6 have a reduced likelihood of being employed (Das and Žumbytè, 2017) and existing literature points to how lack of agency over working-time reduces the probability of women’s employment in paid work. Following this logic, agency over working-time should help in the retention of these women. Given that statistically these women have a reduced likelihood of being employed, I find it particularly important to analyze the situations and therefore identify underlying processes through which these women are able to participate in paid employment and the role of flexitime i.e. agency over the scheduling of working hours in shaping their participation. Since my interest is in identifying the processes through which agency is exercised, I will be analyzing situations under which the same

woman is involved over a period of time. This method is referred to as situational analysis in which the “choice taking of actors is given due weight as against the concentration on the institutional framework” (Mitchell 2000, pp.168) i.e. selection by the individual in any one situation from a variety of possible relationships - which may themselves be governed by different norms (Mitchell 2000, pp.142). The particular relationships and norms selected are likely to vary in regard to “the same individuals from one situation to another and in regard to similar situations from one individual to another” (Mitchell, 2000, pp.143). This method requires the researcher to observe the different naturally occurring situations, the activities and interactions women engage in over the course of a period of time. Therefore, since March 2020, I am working as an intern with the Human Resources department of an Indian software services firm in Bangalore. As part of my fieldwork, I will be observing the time practices of women who have returned from maternity leave to this software service firm over the past 5 years.<sup>12</sup> I will be supplementing the observations with semi-structured interviews with these women and others who were involved in the situation to understand their perspectives on the same. The firm I am interning with has 30.6% women in their workforce and a female attrition rate of 22%. Given that an examination of the claim that digitally-mediated flexi-time is family-friendly (which as discussed before is considered synonymous with female-friendly) is the starting point of my research, I choose to focus on firms that are considered as female-friendly. Accordingly, I will study only those firms which at least one third-party has certified as female-friendly. For instance, the firm that I am currently interning with has been certified as one of the 25 best workplaces for women in the year 2019 by a reputed global organization that certifies firms on the basis of workplace culture. It is difficult to a-priori predict the number of subjects and firms and the duration of my study in each firm (a minimum of three months) and will depend on when I reach data saturation i.e. the point at which no new themes are observed in the data collected with respect to my research questions.

While I have spent about 2 weeks familiarizing myself with the field (before lockdown was made effective), due to the global pandemic and the implementation of work from home for all employees I have not yet been able to effectively begin my observations. Prior to commencing my fieldwork, I had carried out pilot interviews with women in the software services sector to understand how agency over working-time shapes the nature of their participation in the workforce. Excerpts from some of those interviews are presented in Table I:

Table I. Agency over working-time and participation in workforce: Pilot Interviews

Details of participants	Agency over working-time
Case 1: A female software engineer, one month after returning to work to an Indian	“They are not willing to give me time off to feed my child. I have to attend review calls from 7 AM-12 PM which sometimes coincides with the feeding time of the baby. The requirements for review can be easily e-

<sup>12</sup> I have shared the details of my research and have been given permission by the concerned authorities to conduct the research in the firm on the grounds that I will anonymize all data I gather from my fieldwork. I will also be seeking permission from the individual respondents and research participants before conducting observations and interviews. In case I am unable to conduct observations because of the COVID-19 pandemic and the resultant directives to observe social distancing, I will conduct diary studies and follow-up interviews with the women on a daily basis.

<p>software services company after a maternity leave. She has changed her job since then.</p>	<p>mailed to me and I can work on it in my own time, but my manager doesn't agree. I have complained to the HR, nothing has happened. I am really wondering whether I should continue" ... (She mentioned later in the interview that for her, nursing the baby and not giving him expressed milk was an intrinsic part of being a good mother as well as essential for bonding with the child).</p>
<p>Case 2: A female software engineer, who returned to work after a maternity leave of 13 months</p>	<p>"When I joined back, I didn't give too many interviews, maybe 1-2 telephonic rounds. Then I got a call from my previous client and got a job. They told me that they would give me less salary than the time I went on break. I negotiated and got at least the same salary that I was getting. For me the first priority is work-life balance. They allow me to leave at 5 PM and are okay with me not taking any calls from home" ... (She also mentioned that she had very understanding team members - all unmarried men- who willingly agreed to such an arrangement)</p>
<p>Case 3: A female software engineer who quit her job after returning from maternity leave and has been on a break for the past one month.</p>	<p>"When I rejoined, they gave me only one option- a project which had night shifts, that too rotational. I had gone through an ectopic pregnancy and my child was very small. I was okay with any other shift except night shift. I had to quit".</p>

In the first and the third case there is a clear relationship between inability to exercise agency over working-time and the decision to quit (the firm in the first case and the workforce in the third case). In the second case agency over working-time clearly shaped the decision to continue working. One enabling condition seemed to be the composition of the team. However, as literature suggests unmarried men may not under all circumstances be willing to accommodate the needs of women with children and even when they do there are processes that shape their decisions. This points to a need to analyze situations in which women are able to exercise agency over working-time over a period of time to be able to identify underlying processes that can be abstracted beyond empirical cases. These processes could involve relatively enduring external structures such as patriarchy that look at childcare as primarily a woman's duty or conjuncturally specific external structures such as a firm's policies regarding working-time as well as internal structures such as a woman's beliefs regarding motherhood.

## Section 4: Anticipated Contribution

I problematize the claim that digitally-mediated flexi-time, under all conditions, makes work more conducive to participation by workers with demands on their time outside those of paid employment. I argue instead that retention of such workers in the workforce is shaped by the extent of their agency over working-time. Flexi-time is a situated practice and it is the socio-technical context in which it is enacted that determines whether it gives agency to workers. I choose to study women with children up to 6 years who have returned to work after maternity leave because there is research that shows that in urban India women with at least one child under the age of 6 have a reduced likelihood of being employed (Das and Žumbytė, 2017). Moreover, historically, control over the scheduling of working-time has been an important factor leading to greater retention of women with domestic responsibilities. Literature on Female Labour Force Participation (FLFP) has looked at structural factors but analytically not given equal weightage to the agency of women. In the CSCW tradition, while most of the literature looks at designing technology for improved collaboration between technology users as abstract genderless ahistorical entities, the feminist tradition (which draws on feminist HCI) calls for a need to recognize the user as a historically embedded gendered individual with personal goals and life-worlds. Technologies designed to coordinate work activities do not consider providing the worker with agency over working-time as the primary end goal. I argue that a way to create a workforce which is inclusive of workers with demands on their time outside of paid employment is to give them greater agency over the scheduling of their working-time. This, when combined with other enabling conditions, could shape greater retention of these workers in the workforce and prove beneficial for the firm in the long run in terms of encouraging diversity of thought as well as reducing the costs associated with attrition. The first step to do this is to ensure “temporal reflexivity” (Lindley, 2015) i.e. recognize the constructed nature of reified temporal patterns. The next step would be to use situation analysis to describe the processes through which workers exercise agency over these temporal patterns in a particular socio-cultural context. I argue that flexitime is a situated practice that is embedded in a socio-technical system. This socio-technical system could be viewed from a “complex adaptive systems viewpoint” (Kaplan and Seebeck, 2001, pp.372). A complex adaptive system contains “component sub-systems interacting such that they co-evolve” (Kaplan and Seebeck, 2001, pp.359). ‘Forward engineering’ complex adaptive systems can be challenging, especially when its complexities are not accounted for (Kaplan and Seebeck, 2001, pp.373). ‘Reverse engineering’ through identifying processes occurring in naturally occurring situations is very effective in “uncovering the stories that explain the how and why of socio-technical systems” (Kaplan and Seebeck, 2001, pp.373). These insights may be used to “steer evolution” i.e. reuse design tricks that worked earlier and recombine or extend these tricks (Kaplan and Seebeck, 2001, pp.373). While some frameworks have been suggested that can help to codify these design tricks they are always contingent on practical experiences, local context and skill of the practitioner.<sup>13</sup> Alternatively, as Schmidt has argued, insights from research may not provide “specific design recommendations for specific systems” (Schmidt, 2000, pp.145) but contribute to the “conceptual foundation of CSCW” (Schmidt, 2000, pp.146) by uncovering “the practices through which the myriad distributed and yet interdependent activities are meshed, aligned, integrated, because it is the very practices through which such orderliness is accomplished that must be supported” (Schmidt,

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<sup>13</sup> For a detailed discussion refer to Kaplan and Seebeck (2001)

2000, pp.145). In my research I intend to uncover the processes that go into creating temporal patterns in work practices and the role of individual agency in these processes. The role of individual agency has not been sufficiently addressed in the existing literature. By describing how agency over working-time shapes the nature of workforce participation in digitally-mediated work, I hope to indicate possibilities for design that can be incorporated to encourage agency over working-time. The question of providing agency over working-time to all workers has become even more relevant now, in view of the current COVID-19 global pandemic and the ensuing change in work practices where a majority of the working population have had to take up work-from-home options leading to a blurring of physical boundaries between work and home.

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