

Interrupting Merit, Subverting Legibility: Navigating Caste In ‘Casteless’ Worlds of Computing

Palashi Vaghela
pmv49@cornell.edu
Cornell University
New York, USA

Steven J. Jackson
sjj54@cornell.edu
Cornell University
New York, USA

Phoebe Sengers
pjs54@cornell.edu
Cornell University
New York, USA

ABSTRACT

Recent work in HCI has shed light on structural issues of inequality in computing. Building on this work, this study analyzes the relatively understudied phenomenon of caste in computing. Contrary to common rhetorics of ‘castelessness,’ we show how computing worlds in India and Indian diasporic communities continue to be shaped and inflected by caste relations. We study how, when and where Dalits (formerly ‘untouchables’) encounter caste in computing. We show how they artfully navigate these caste inscriptions by interpreting, interrupting and ambiguating caste and by finding caste communities. Drawing on the life stories of 16 Dalit engineers and anti-caste, queer-feminist and critical race theories, we argue that a dynamic and performative approach to caste, and other forms of inequality in HCI and computing, emphasizes the artfulness and agency of those at the margins as they challenge structural inequality in everyday life. Lastly, we suggest practical ways of addressing caste to build more open and inclusive cultures of global computing.

CCS CONCEPTS

• **Human-centered computing** → **Empirical studies in HCI**;
Empirical studies in collaborative and social computing.

KEYWORDS

technology and inequality, caste, merit, feminist HCI, postcolonial computing

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1 INTRODUCTION

In a 2019 lawsuit, the State of California accused Cisco Systems of tolerating and being complicit in the ongoing discrimination of a lower-caste, Dalit employee of Indian origin by upper-caste, Brahmin managers [91]. This case has stirred a transnational discussion

on the Indian caste system and its perpetuation in the modern, globalized economy and specifically in the computing industry. Since then, multiple reports relaying similar incidents experienced by other Dalit engineers in the US have come forth [42, 102, 129]. A recent survey also showed that an overwhelming majority of Hindu Indians in America self-identify as belonging to the category of General or upper caste, affirming that the majority of Indians in the US are upper caste [12].

This recent attention is set against a long-standing counter-narrative in India which emphasizes the caste-free nature of computing, and the essentially meritocratic nature of inclusion and advancement in the industry [45]. In both India and in the growing Indian diasporic communities in countries like the US, the purported castelessness of computing is in turn connected to the powerful self-image of the sector as a site of modernity, innovation, and a model of excellence built on merit and accomplishment, unencumbered by “old” forms of hierarchy and privilege. The industry prides itself on breaking away from trends of preferential treatment and on hiring talent purely on the basis of ‘merit’. This has given new impetus to work unpacking meritocracy within professional hierarchies of computing, which has revealed that merit is often seen as being in conflict with caste-based affirmative action in India [126, 132].

Instances like California vs. Cisco raise questions about what is rendered visible and invisible as we narrate stories of meritocracy, equity, and inclusion in contemporary computing worlds. They suggest that caste is alive and well in the computing industries, and like other lines of inequality and difference, it shows a remarkable suppleness in adapting itself to new industrial and social conditions. A growing body of scholarship in HCI is investigating issues of structural marginalization in computing, including which communities are designed for, how to appropriately design and research with underserved populations, and who is structurally able to participate, advance and lead in computing workplaces. Much of this work has focused on issues around gender identity, race, and economic class. This work extends this discussion by tracing missing links between caste and worlds of computing and/or HCI that manifest in claims to merit and castelessness, and their relationship to differential practices and experiences within educational settings and computing workplaces. Adopting a biographical or a life stories [77] approach, we focus in particular on the everyday caste encounters of Dalit engineers: how strategies of navigating caste and castelessness are learned and evolved over time, and the complex and varied choices Dalit engineers make as they occupy and traverse these categories and worlds. We show how patterns of inequality and exclusion may be underwritten by ideas (and ideals) of meritocracy and castelessness, and how Dalit engineers navigate, play with, and occasionally subvert these patterns: by interpreting,

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interrupting, and ambiguating caste identities; and by finding caste communities.

Our study makes three concrete contributions to HCI studies of inclusion and inequality. First, we challenge the purported 'castelessness' of computing by shedding light on the subtle and less-than-subtle ways in which caste relations are encountered and experienced by Dalits – we do this within the context of an alignment of caste with ideas of merit in the computing industry. Second, we emphasize the *dynamic, performed and performative* nature of caste (and other powerful lines of social division) emphasizing the role and agency of Dalit engineers themselves in the artful navigation of caste divisions. We argue that this is an essential corrective to fixed or static portrayals of extant social divisions, and also to harm- or 'damage'-centered narratives [131] in which lack, loss and suffering, rather than creative and agential responses, are framed as the sole or dominant experience of marginalized and disadvantaged groups. Third, we show how this theoretical approach to caste and caste experience might lend itself to productive insights and mutual learning with other experiences of marginalization and inequality in HCI, including those where identity is understood as situated, relational, and (deeply) historically accrued, but where the artful performance of those at the margins of computing worlds can nevertheless navigate and subvert structures of power and control (if always partially and within limits). We conclude with suggestions for practical ways of addressing dynamics of caste in computing cultures and HCI and a call for further work that can better unpack the complex dynamics of caste and castelessness (and other markers of distinction and division) in worlds of computing and HCI today.

2 BACKGROUND AND RELATED WORK

We begin with a limited but focused background on the caste system in India with the awareness that scholarship on caste is vast and manifold. We focus on work relevant and important for us to frame the stakes and argument of this study. Caste in India is a ubiquitous infrastructure manifesting in many forms that only become salient in different spatial-temporal settings and contexts. Historically, caste has been an inherited marker that has determined extensive aspects of social status, including what employment people can take up, with whom one can interact, and whom one can marry. These differentials have brought some castes much more social and economic power than others. While caste became an enticing anthropological question during and after the British colonization of India and has been extensively studied and theorized by both western and Indian scholars [see [32, 39, 41, 48, 49, 53, 93, 121]], a cornerstone of anti-caste scholarship and activism are the works of Dr. BR Ambedkar. We situate caste through the scholarly and political work of BR Ambedkar in the post-colonial context to underscore how despite the narratives of progress and modernity, caste continues to persist with a peculiar tenacity.

Ambedkar was one of the first legal and anthropological scholars to develop a detailed analysis of the relationship between the Hindu religion and the caste system. Hailing from the Dalit community, Ambedkar identified three principal mechanisms by which caste hierarchies were maintained and enforced: first, caste is a system of graded hierarchy rooted dynamically in the (evolving) division of labor as well as laborers [6]; second, caste does not have

a divine/scriptural origin but is codified by Hindu law-givers in the form of an evolving social practice; and third, castes are born and shaped on an ongoing basis through the use of gendered violence and patriarchy embedded in caste endogamy[7]. Throughout, Ambedkar's analysis emphasizes the persistence and dynamism, even the *modernity*, of caste: his call to "annihilate caste" [6] is not about the elimination of a hidebound and vestigial social institution, as it is sometimes mischaracterized; rather, it is about *the dismantling of a machine and set of practices within Hinduism by which caste as a form and marker of social division and inequality is perpetually reproduced and evolved*.

Ambedkar's scholarly work explicating the role of the Hindu caste system in maintaining the lower castes in a subservient position was accompanied by his contribution to the post-independence polity. His dedicated representation of the issues of the depressed classes (the term historically used for lower castes), and his motion for the annihilation of caste [6], have made him one of the most revered leaders across marginalized communities in India. The followers of Ambedkar call themselves Ambedkarites, many of whom have followed his footsteps in resisting the Hindu caste system by converting to Buddhism [20]. Ambedkar continues to be remembered as the architect of the constitution of India across different socio-political factions. Nevertheless, his critique of the Hindu caste system and his call to "annihilate caste" [6], as well as his work in social mobilization and transformation of the political identity of 'untouchables' to Dalits [109], is not as often spoken about among the practitioners of Hinduism, especially those hailing from upper castes. The political transformation of Dalit subjectivity is rooted in Ambedkar's work of articulating the politics of suffering into a politics of claiming agency in the 19th and 20th century [109]. This was critical in ensuring that Dalits pursued equality by rejecting the paradigm of exclusion rooted in Hinduism, thus laying the foundation for moving away from traditional professions to modern ones [58].

Modern, urban Indian society understands itself as moving away from caste. Many of the formal legal reforms of the post-independence state have sought to eliminate, blunt or correct, on paper and to some extent in practice, the worst edges of long-standing caste divisions and inequalities. Still, caste continues to be salient in both explicit and implicit ways. For example, caste location is always salient in conversations of marriage, since caste hierarchies are maintained in Indian society through caste endogamy, or in-group marriage. Mirroring other forms of exclusion like gender and race (an analogy developed in greater detail by Wilkerson [137]), implicit caste advantages take the form of social networks, cultural capital, fluency in English, or access to private education, which historically and currently remain correlated with upper caste membership (and thus often operate and are interpreted as caste proxies). While Dalits and other lower-caste communities have gained political and economic mobility [66, 80, 103], there continues to be a significant deficit in their educational, social and financial gains compared to upper castes in India [36, 103].

Caste also has a distinct and enduring connection to the world of employment and professions. The caste system was legitimized on the basis of the text *Manusmriti* where caste or 'varna' were associated with professions or occupations to be held by the different members within the caste hierarchy. Thus the argument of

Ambedkar that the system actually facilitated a division of labor and laborers [6] within colonial and later post-colonial life that was essential to other political projects - for example, the endemic challenge of governance in a vast and diverse polity, and the projects of industrialization, economic growth and extraction, and control associated with the colonial and postcolonial state. A recent study confirms that caste members are greatly overrepresented in their traditional occupations [27]. In a study examining the relationship between liberalization and social mobility in India, Vaid finds that higher castes dominate the higher social classes, i.e., in professions including doctors and lawyers, large business and farming occupations, and white-collar work. Conversely, Dalits, are underrepresented in secure white-collar or business and farm ownership classes and are strikingly over-represented in "lower income, less stable, temporary employment in the manual work categories and in lower agriculture as labourers" [134, p. 10]. Beyond the dynamics explored further in this paper, this reflects a much older pattern in which lower castes were forbidden from learning to read or write the scriptures under vedic law [72].

Within this context, the recent strides made by lower castes in education and social mobility challenges the division of labor codified in the caste system. An important question then is what happens to ideas of caste understood as division of labor when Dalits and other lower castes make their way into industries and professions previously inaccessible to them? What is the experience of Dalits in these highly literate professions like computing dominated by upper castes? How do the patterns and effects of caste continue to operate, even after their substantial formal abolition in law, and in sectors, like computing, often held to represent the leading edge of modernity and the future, and thus farthest away (or so it is assumed) from the 'backward' social institution of caste? ¹ The paper that follows offers some early and speculative answers to these questions by building upon the emerging interest in caste in a way that has hitherto not been explored in HCI before - delving into the everyday experience of Dalit engineers. As detailed below, our research draws from and speaks to three main strands of work situated in the history and context of the evolution of caste as a phenomenon and particularly relevant to understanding caste as a form of structural inequality in computing culture: (1) theoretical work on the phenomenon of castelessness and affirmative action in modern India; (2) emerging work on meritocracy in computing and its relationship with caste, particularly in the contexts of higher education and the corporate sector; and (3) the literature on inequality and structural marginalization in HCI, particularly feminist and anti-racist HCI.

2.1 Affirmative Action And The Emergence Of The Casteless Upper Castes

¹This instinct around the modernity of social division, and the importance of acknowledging the presence and ongoing operation of inequality in the 'leading' rather than the 'trailing' sectors of the economy, mirrors the recent new economic history of slavery in the American context, which emphasizes the modern and formative quality of nineteenth century slavery in the US, rather than its residual or retrograde quality; see *inter alia*, [19, 113]. This effort to 'unhistoricize' inequality - in the sense of understanding the dynamic unfolding of systems of inequality like caste today rather than relegating them to an unfortunate and regrettable past, is essential to their project and to ours. It is also central to any contemporary reading of Ambedkar.

One way in which caste equality is being pursued to remediate historical discrimination faced by lower caste communities is through the policy of 'reservations,' i.e. affirmative action for lower castes in government and educational institutions. The constitution of India renders three categories of castes as entitled to special provisions from the government: Socially and Economically Backward Castes or Other Backward Classes (OBCs), Scheduled Castes (SCs) (also known as Dalits, previously classified as 'untouchables') and Scheduled Tribes (STs) (the indigenous and native tribes of India). These categories contrast with the upper castes, termed General Category (GC). Initially, 15% and 7.5% reservations were legislated in the Indian constitution for Scheduled Castes (SCs) and Scheduled Tribes (STs) respectively. Later in 1980, based on the report of a special committee assigned to look into the question of disadvantaged groups in India, 27% reservations were also introduced for Other Backward Classes (OBCs).

While reservations have been critical in enabling the mobility of lower castes in India, they have also been widely contested. Critics of reservations have decried the fault line between those who fall under the General Category (upper caste) and those who benefit from caste-based reservations. The 1980 judgement affording reservations for OBCs saw country-wide outrage from upper-caste students, including a number self-immolating in protest. Studies have shown a growing insecurity and resentment among members of the upper castes towards upwardly mobile lower castes, particularly Dalits, whose ascent has been substantially supported by reservations [31, 120, 124, 135]. Socio-political and economic gains for Dalits are often seen as 'wrongful', leading to acts of aggression or violence, as when members of dominant castes beat up or harass Dalit teachers [2, 100] or when Dalits involved in inter-caste love affairs or marriages are harassed, attacked, or killed [31]. Dalits, stereotyped in media and public debate as inherently inferior, endowed with a low intellect, supine and docile, have broken this stereotype through their educational achievements, increasingly confident and assertive behaviour and demands, and exhibition of consciousness of their power and rights in a democratic polity, sparking a fierce backlash and growing politics of resentment [31]. In this light, the recent rise of Hindu nationalism in India can be seen as a revolt of the upper castes against the egalitarian demands of democracy [40].

Arguments against reservations are often framed around the concept of 'merit,' i.e., assertions that reservations cause less-deserving lower-caste persons to take the spots of more deserving higher-caste individuals. This framing of merit ² elides the role that historical capital held by upper castes - literacy, networks, land-ownership, mobility, and education - plays in producing modern forms of social capital particularly useful in the private sector, such as the ability to speak English [38]. While Dalits and other lower castes must assert their caste status to obtain equal rights to education and work, upper caste individuals don't need to explicitly invoke their caste to negotiate the system; they can rely on their capital instead,

²In this paper we use the term merit within the context that the term is used by upper castes in India and Indian diaspora in common parlance to frame themselves as meritorious vis-a-vis the unmeritorious lower caste students. It is a term already framed in the field and we encountered it through our respondents as well as the literature we review. Thus it is an actors category and not an analysts category [33] and we do not subscribe to this framing of merit as researchers and scholars.

while internalizing and naturalizing historically accrued advantages under the mantle of individual ‘merit’. This produces a rendering in which upper-caste individuals are able to frame themselves as largely casteless (and meritorious), while lower-caste individuals are seen as still marked by caste, and for some, the subject of suspicion of unearned advantage.

2.2 Caste Of Merit In Computing

These issues are particularly fraught within the technology sector, which is built around a thick and complex interrelationship between ideas of class, caste, and meritocracy within IT and the wider engineering fields. In a historical analysis of how and why upper castes (especially, Brahmins) [51] claimed the ideal of merit in the context of technical skills (engineering), which were traditionally associated with lower castes, Subramanian finds the concept of merit emerged from upper-caste self-understandings as exceptions who have risen on the basis of their intellect and autonomy [126]. It is bolstered by the perception that General Category students who make it to engineering are those with “raw intelligence” needing no help from quotas, unlike the crammers from other categories who are largely products of coaching centers [126]. The idea of “raw intelligence” is reinforced by the system of competitive examinations which are central to the pipeline of engineers. The rank in competitive exams becomes the only differentiation in candidates that is legitimate and indisputable. This makes all other forms of differentiation seem subjective in comparison, and minimizes the contribution of economic and cultural resources while emphasizing the apparently intrinsic ability of ‘meritorious’ students, who are largely upper caste [37]. Claims of meritocracy within the General Category are heightened within educational institutions of computing as well as workplaces as Computer Science and Electronics and Electrical Engineering are the most competitive streams of engineering to get accepted into within technical colleges in India. The top ranks across General and Reserved categories opt for these streams and the perception among the engineering community is that only those with the highest merit are able to make it to the computing industry.

Studies of caste in engineering fields have shown that historically underprivileged castes like SCs and STs, especially those from poor and rural backgrounds, continue to find it hard to make it to engineering institutions in India [50, 75]. When they do make it to these spaces, they are more likely to drop out than upper castes [87, 115] while simultaneously failing to find faculty representation from their communities [130]. This situation is exacerbated by efforts to remove affirmative action for lower-caste faculty in top engineering institutions like IITs [1]. The culture of computing itself is also shaped implicitly through upper-caste markers, producing barriers to lower-caste participation. Scholars have noted the prevalence of subtle Brahminical³ caste norms in the field of IT such as preference for vegetarianism or clothing styles of Brahmin women managers [79, 79, 97]. Elite educational institutions in India

are grounded in what P. Thirumal has called “*material caste practices that go beyond calculable intentions of elites to hurt, insult or humiliate Dalit Bahujans*” [127, p. 36]. P. Thirumal argues that caste is produced and normalized in higher education institutions of India through a profusion of practices grounded in upper-caste sense-making processes in everyday activities from the classroom to the canteen to the washroom [127]. This produces a situation where computing culture may be experienced as casteless by upper-caste individuals, while lower-caste individuals nevertheless continuously encounter moments where caste is inscribed in everyday life.

Hiring in the IT industry too is laden with the language of merit, where it is contrasted with the nepotism of old industries driven by personal ties, family connections, or caste itself [86]. Scholars of IT and engineering in India have found that merit is understood as a proxy for good English language skills, ‘good’ family background (where ‘good’ is associated with upper-caste markers) [50], or private education, which is more likely to lead to access to better technical education at the top engineering institutions [45, 126, 132]. These are all attributes associated with upper-caste resources. The lack of reservations within private sector, and the fact that most of the the computing industry in India is privatised, makes it that much more unlikely for Dalits to make it to these spaces. Survey of private industries in India show how upper castes tend to be overrepresented in these spaces [67].

Within urban and modern workplaces such as those in the IT sector, upper-caste insecurity and perceptions of Dalits can translate into name-calling [89], harassment, and insults targeted to those who have availed reservations in their education or employment [68]. A noted increase of caste bullying in the workplace, particularly of Dalits, has been observed in the Indian diaspora [29, 78, 82]. This sometimes takes the form of perceiving Dalits as incompetent and expressing disdain for Dalit managers or bosses [68, 78, 82], who may be targeted with humor used to disparage Dalits by criticizing reservations and celebrating merit. [136] Dalits’ proficiency is often not recognized even when they are competent enough [18]. These perceptions and consequences of reservations have led some Dalits to believe that access to positive discrimination lowers their social standing [88, 90]. Dalit employees find it difficult to raise their voices against such practices, as they are a minority in the corporate sector and doing so would make their interactions at work difficult, eventually forcing them to quit. [82] Thus, they often try to conceal their caste, fearing that disclosure of caste could affect them adversely [69]. The corporate sector has emerged as a safe haven for the class and caste elite of India, because it denies any form of reparation or compensation for lower caste candidates like reservations [4].

2.3 Situating Caste in HCI

Work on caste in HCI and adjacent communities like CSCW, ICTD or FAccT is in an early stage of emergence. Existing work in these areas highlights caste as a category of marginalization or a source of bias. For example, emerging work on AI in the global south shows how casteist roots of law in India are inscribed in technologies like mapping and datafication in predictive policing

³Derived from ideas of Brahminism where the caste system is subscribed to the Brahmin view of caste. Such perspectives within Hinduism locate Brahmins at the top of the caste pyramid and strive to uphold the caste hierarchy in the social, economic and cultural life of Indians. See inter alia [5, 7, 28, 55]

crimes [85]. These works underscore how AI systems need to understand and consider the nuances of caste-discrimination in South Asia as they might exacerbate existing caste and class inequalities [73, 116]. Previous work in HCI has shown that caste is invoked in the form of markers of purity [57] and inflected by caste and class differences in the infrastructure of beauty work and housework on digital platforms [110]. As mentioned earlier, caste and labor are deeply intertwined in India and South Asia, and in the case of platform work it shapes algorithmic and bureaucratic relations [8, 110]. Other work has shown how political networks on social media can be Brahmanical in nature, with upper-caste politicians tending to connect with and amplify the voices of other upper-caste politicians [133]. Previous work in ICTD has looked at challenges of lower-caste communities in accessing information and professional opportunities in the technology-driven gig economy and the role of caste in a technologically mediated health or community media efforts [83, 99, 104].

In this work, we build on this interest in caste to better elucidate how caste operates within computing culture and to better situate HCI/CSCW understandings of caste within historical and contemporary manifestations of caste relations. The goal of this work is to establish first steps towards theorizing and locating caste as a relevant form of identity in its own right within computing, much like gender or race. Our specific contributions focus on the experiences and strategies of Dalit engineers negotiating the purported merit-based, casteless world of computing. In doing so, this paper speaks to interest within the HCI community in understanding the role of marginalization within computing cultures, and whose perspectives are privileged in technology design methods, results, and knowledge. In this paper, in line with feminist HCI's methodological commitment to activism [17], we take an explicitly anti-caste perspective. Our interest in caste builds on the insight from postcolonial computing that apparently outmoded historical power relationships continue to shape contemporary computing cultures [65]. Our study looks at relations of caste in computing and HCI communities to build a historical and situated understanding of caste subjectivities in computing and HCI [15] by locating its evidence in the experiences of Dalit engineers. Our work thus closely draws from and contributes to critical race [70, 92, 101] and feminist understandings [16, 17, 43, 46, 107, 112] of marginalization in HCI and computing by focusing on the perspectives emerging from the stories of those seen as "untouchable" at one point of time under the caste system [24, 43, 47, 106, 114]. As we will detail in the next section, these works help us recognize and trace how our knowledge, methods, and practices are rooted in situated standpoints, identify issues of structural inequality in technology research and design, and propose alternatives based on the study of such issues.

In our paper we also draw upon and contribute to works that complicate one-dimensional understanding of identity [119] and urge us to delve into histories and contexts [118] of different social relations for better tackling the question of science and morality [17]. These considerations are important not only for understanding how normative understandings of social relations or design of social systems may perpetuate harm for historically marginalized communities [74, 118], but also to enable a more nuanced understanding of the technological subjectivities of both users [61] as

well as HCI or computing practitioners [60]. Hankerson et. al. build upon the argument that artifacts take on characteristics that reflect values of their creators [21, 138] to propose that technologies have race [60]. At the same time, we propose to situate a historical understanding of caste subjectivities to mitigate harm to communities at risk as well as find "*ways to cultivate and transform, rather than merely support, human agency.*" [15]. Drawing from queer theory, Light's work proposes paying attention to forms of resistance to formalized identity in computing to design technologies that help users define themselves [76]. We find in our study of caste that a stable and static understanding of caste fails to capture the nuances of the experiences of Dalit engineers. We propose a more performative and situated approach to questions of historical discrimination in the worlds of computing where the artfulness and agency of those at the margins challenges structural inequality in everyday life.

Our focus on Dalit engineers speaks particularly to work that explores the marginalization of communities and classes of people in the production of computing and in computing research itself. Avle et al, for example, look at challenges that designers in China, Ghana, and Jamaica face in navigating identities as technology producers in the context of discourses that valorize Silicon Valley as authoritative [10]. They examine how entrepreneurs are caught in a double bind that simultaneously upholds and subverts discourses that place them and their contributions as marginal. A recent explosion of work explores the role of racism, particularly anti-Black racism, in HCI itself. Drawing on critical race theory, Ogbonnaya-Ogburu et al. find that racism is an everyday and constituent feature of the field [92]. Rankin and Thomas [108] and Erete et al [44] describe how Black women's research on underserved communities in particular has been sidelined, understood as 'service' rather than knowledge production, or policed as 'inappropriate' in HCI discourse because it references structural inequalities. Erete et al [44] and Ogbonnaya-Ogburu et al [92] describe how a colorblind emphasis on meritocracy normalizes a white-dominated HCI, invisibilizes issues of racism, and makes it appear that only non-White researchers and participants have a racialized history. We will find Dalit engineers face analogous challenges, while navigating them within a different history of casteism and castelessness. This produces a set of encounters with historically accrued inequalities that can both teach and learn from HCI work around the complex relations between computing and inequality.

Building on these insights, this paper explores dilemmas that arise from the intertwining of 'merit' with caste in an ostensibly casteless computing culture. Owing to the stigma associated with their caste, most Dalit affirmative action recipients try to assimilate through methods of concealing caste like changing surnames or by passing as upper caste, yet they must affirm belonging to a lower caste to obtain benefits [80]. This contradiction places them in a precarious position in spaces highly dominated by upper castes. At the same time, the positioning of merit as the true claim to belonging in science and technology, as well as being in opposition to reservations, sets the stage for marginalization of Dalits in the field of computing. Our work builds on the literature detailed in this section to ask: How do notions of merit, caste and castelessness manifest in everyday culture and practice of computing? How do Dalits in computing encounter and deal with these notions? What

do their experiences tell us about the phenomenon of caste? Why and how does this matter for HCI and computing, writ large?

3 METHODOLOGY

To undertake a study of the experience of caste in computing by focusing on one of the most marginalized castes, Dalits, is an analytical move rooted in the pragmatist and feminist theoretical tradition of what Strauss and Star have called “*studying the unstudied*” [122]. It is also rooted in long-standing feminist precepts that ‘*the personal is political*’ and by extension, that the personal can be analytic. The first author of this piece is herself a Dalit scholar and one-time software engineer with first-hand experience of some of the dynamics described in this paper. Our approach also draws on methodological commitments drawn from feminist and critical race theory in HCI, particularly Bardzell and Bardzell [17], Ogbonnaya-Ogburu et al [92], Erete et al, [44], and Rankin and Thomas [108]. Read together, these works recognize how power differentials between researcher and researched have historically marginalized some perspectives while promoting others to an apparent universality. In response, it emphasizes that knowledge comes from the situated, embodied perspective of researchers in relationship with particular participants. These approaches encourage a reflexive and activist stance by the researcher, oriented to the self-identified needs and interests of marginalized groups [17]. Rather than highlighting universality, these approaches “*[promote] historically marginal voices as data sources*” [17], because these are seen as providing a unique expertise [44, 92, 108] or standpoint that offers special insight into structural inequalities that may be invisible to those with more privilege [44, 108].

Inspired by the work of Dalit feminists [11, 13, 94] and Black feminist scholars [34, 63, 64], we oriented to learn about the life narratives or stories of Dalit engineers in India and the Indian diaspora. The idea of life story is closely related to work in the African American oral tradition or the idea of testimonios in Dalit literature, where the voice and experience of those whose lives have remained invisibilized are brought to the fore through interviews and ethnographic research to reinscribe them in the historiography of modern societies [92, 95, 111]. These storytelling strategies have also been taken up in work drawing on critical race theory in HCI; Ogbonnaya-Ogburu et al [92] and Erete et al [44] describe storytelling as a form of activism which uses counterstories to challenge entrenched narratives [92].

We also find resonances with American pragmatism, which has long adopted an anti-essentialist position that emphasizes the crafting and recrafting of identities over time, including through the crucial mechanism of stories and self-stories: biographies through which a figure of coherence is maintained vis-a-vis the world, but also vis-a-vis ourselves. As scholars like Bruner [25] and Linde [77] make clear, life stories provide windows into the way we use narratives to create and maintain, but also alter and repair, an identity over time. As this method emphasizes, biographical coherence - the unified sense of a self and life - is built and maintained over time, where accidents and contingency play an important role in gathering and shaping experience into a kind of provisional (though always changeable) coherence. This also makes them dynamic

and responsive to evolving self-understandings; unlike a straight-up chronological history of (personal) events, life stories evolve through time, with different interpretations and events drawn to the fore (or pushed to the background) according to our own evolving self-understanding and in the interests of a global (if dynamic) coherence of self. Deployed as a method, this means understanding identity and the categories that underlie it as subject to ongoing and retrospective adjustment, as people make sense of the events of their lives in all their heterogeneity, contradictions and messy uncertainties. This dynamic and evolving character is, as they say, a feature and not a bug.

But stories and self-stories are not without risk. Ogbonnaya-Ogburu et al [92] and Erete et al [44] point out that storytelling carries significant risks for those telling stories from underheard perspectives. One such risk is epistemic violence, when stories are ignored or dismissed, which can lead to self-censorship [44]. In our own study, we saw this reflected in recruitment challenges, as sensitivities around caste in worlds of computing led many people to express hesitation in even talking about it [45]. The perception that those who avail caste reservations are unmeritorious or somehow lack legitimacy to belong in computing [126] makes it difficult to find engineers who would identify themselves as members of the SC community. As the first author of this paper is from the SC and engineering communities herself, she had a way to build connections with the Ambedkarite communities in the Indian diaspora that led her to her first set of participants. From there we snowballed to find other Dalit engineers. We interviewed 16 people in total between the age range of 22-50 years, 6 of whom identified as women and 10 as men. It was particularly challenging to find Dalit women engineers to interview; in addition to our own lack of reach into the right kinds of networks, this may also reflect a feeling of being “doubly bound” [35, 95] within relations of caste and gender that complicate making it to the field of computing or, when they do, coming forward to share their stories.

Pilot interviews were conducted in July-September 2020 on Zoom owing to the pandemic. During the course of the pilot study, it became clear that Covid would likely not make it possible to conduct interviews in person. This enabled a decision to recruit participants not only in India but also in the US and UK. The fact that the first author belonged to the Dalit community helped with finding participants but it was no guarantee for convincing them to participate in the study. Participants asked her, rightfully, to explain the premise and intent of the study as well as the measures she would be taking to protect their privacy and anonymity. Two participants backed out of the study, saying they felt unsafe sharing their stories, as it might lead to backlash at work. One of them didn't believe our study would materially change anything for the way casteism and caste continues to operate in the world of technology. The pre-interview conversation entailed a detailed discussion of the motivation of the study, discussing my own caste/jati⁴ position within the Dalit community. This also became a form of solidarity building, where the lead author shared her own sense-making of caste across different life stages, how her relationship with caste

⁴Caste groups like SC, ST, etc. are a macro-category containing many sub-castes or what are called ‘jatis’ in the Indian parlance.

identity evolved over time and how she had encountered caste in the worlds of computing.

The pre-interview usually lasted about 35-40 minutes, where she tried to learn as much as possible about their family, childhood, where they grew up, and current circumstances of the participants, in both personal and professional life, to build context for the interviews to follow. We gradually segued into caste with their first experience or encounters with caste within or outside of the home, especially in school. These stories afforded context around how they related to their earliest experiences of learning to see and interpret caste as well as strategies for navigation. In addition to building rapport and trust, it opened up a dialogue on formative episodes that led to their experiences in college or the workplace, and showed certain consistencies (or 'stickinesses') in how childhood experiences of caste, including strategies of caste management learned through family, carried over and shaped later college and workplace encounters.

In the second interview, the worlds of computing became the focus of our conversations. We discussed encounters in college which revealed how their strategies and learning to read caste evolved from school/childhood. Here, we saw reflections on caste experiences emerge in full through stories of encountering merit or nonchalant invocations of caste in everyday life. Through the recollection of stories, it became clear how they learned to find other Dalits in computing, and how each encounter had its own context within which the acts of subversion or interruption were constructed. We did a total of 36 interviews across six months amounting to a total of about 46 hours, close to 27 hours of interview time with engineers in the US and UK and 19 hours with engineers in India. All interviews were conducted in English. In addition to being the professional language of the worlds of computing, it was the common language accessible to both the researcher and the participants as the latter hailed from different regions of India with different native languages.

Data was analyzed through multiple iterations of coding using grounded theory [30, 125] principles. In our first round of open coding, we had around 490 codes, which were then narrowed to about 100 based on repetition and sameness in meaning. We then grouped these codes into themes and wrote up 20 analytical memos about the methodology and content of interviews. Each of these memos helped us understand the temporal and thematic quality of the data at hand. For this particular paper, we decided to focus on memos and codes pertaining to the themes of encountering caste at computing institutions and leading to three distinct categories of interpreting, interrupting and subverting caste inscriptions in computing. We later broke down the experiences of subversions into two separate strategies - ambiguating and finding caste community.

Throughout our research process, interviews were interspersed with practices of transcript review, coding, methodological planning and review, and analytic development involving all three members of the project team (though led and primarily performed in all instances by the first author). Per grounded theory [30] and wider interpretive techniques, this ongoing work also shaped the further recruitment and selection of participants, the formulation of topics and questions for round one and round two interviews, and an emerging set of analytic themes and questions (some of which first appeared as codes in initial inductive and later more structured

rounds of coding). Several of these are reflected in the paper that follows; other initially prominent themes and questions were demoted in importance (in light of early findings and experiences reported by participants); still others remain the subject of ongoing work. In this way, per grounded theory technique, the elicitation of themes, ongoing analytic development, and the understanding of the research team remained (and to some extent remains) subject to ongoing discovery and testing on the basis of the accumulating field experience. Throughout this process the first author's standing and experience as both Dalit and graduate of an undergraduate engineering program played an important role in access, interpretation and the ongoing integration of results. The second and third authors are white North American researchers (one with a history of collaborations in South Asia), who played ongoing roles in feedback on initial project ideation and recruitment; review and feedback on early transcripts, coding and themes; collaborative and parallel analytic memoing; and joint writing, including through connecting emergent themes to relevant resources and problems in the broader literature of HCI and the social sciences.

This process also reflected a number of key methodological turns and challenges. One of these involved an evolution of the questions for women in our participants, particularly those who insisted they had not had any interesting experiences of caste as they became engineers. We asked them to talk about difference, to tease out where and when they might have learned to see differences between them and upper castes in computing. This led us to instances which were not encounters about caste explicitly, but where caste became salient as a difference that operated implicitly. For example, one of our participants responded with a story about how she kept failing at her course in engineering until she realized that the upper-caste students in her class had access to networks of alumni who were helping them with previous years' exam papers or guiding them with their notes on what to focus on in preparation for exams.

Being a Dalit woman and one-time software engineer having these conversations was both a privilege for the first author and an opportunity to reflect on her own journey. For example, she could sense that during the first pre-interview conversation one of the participants, who identified as a woman, didn't trust her completely. This was understandable, not in the least because talking about caste as a Dalit person requires one to be vulnerable and open about some of our most humiliating and difficult experiences. Sharing the information that she was Dalit helped address the initial hesitation one might have about talking about this to someone who might be upper-caste or male, but it was not enough. It affirmed the fact that it was not a marker of identity that determined the form of comfort and disclosure, but the nature of the relationship, which in her case took weeks to build. Thus, while interviewing the participants, she had to take utmost care to respect the boundaries of what they were comfortable sharing. Additionally, she took more effort to be an active conversationalist than a passive interviewer. This meant that her reactions sometimes were not stoic or refrained in the manner of an "objective" researcher, but active reactions to the things she was hearing as a Dalit woman.

While this helped her relationship with the interviewees and is in line with feminist commitments to relationality [17, 123], it also left her feeling uncertain about her method of interviewing. She actively engaged with all participants, but found herself putting in more

effort with those who were skeptical or not easily persuaded to open up about their experiences. Trust was an active negotiation. She also punctuated certain moments by sharing her own experiences of caste that might be akin to the ones being shared by them. At times she shared stories about her own caste experiences unprompted as part of the sharing exercise that was the conversation. This sparked some connections for them leading to a story that they were reminded of in response to hers. Beyond the instrumental use of this method of elicitation, it was also an exercise in building trust.

It is important to underscore the delicate nature of interviewing in this study despite having similar caste locations, because we were entrusted with intimate stories revealing the pernicious persistence of caste that were emotionally taxing for our participants to recount. Placing an objective method of interviewing as the highest priority instead of relationship-building would have been insensitive in this case [17]. Having had similar experiences herself, it invoked an emotional and affective response from the first author, where she was moved to share her narrative and stories with them as part of the ethical contract of anti-caste solidarity. This also meant that her promise of anonymity and safety of their stories became more than paperwork. By sharing her stories of experiencing caste when they shared theirs, the ethics of storytelling took root in practice and process.

4 FINDINGS

This is a story about caste inscriptions - how caste is inscribed, re-inscribed or un-inscribed in the social encounters and material infrastructures that constitute computing workplaces. It is a story about the dynamism of caste as an action and as a sediment of codes, signals, signs and symbols; a story about the noun inscription as well as the verb inscribing. As we will show in the following stories, the power of caste in worlds of computing rests on both the noun and the verb: the actions of making caste legible and inscribing them on bodies and infrastructures, and the effects as these inscriptions are taken up and sometimes challenged or subverted. We feature in particular the life stories of three of our participants, calling out the nature of caste encounters in both professional and educational settings, and the distinct forms of action and agency deployed in navigating these worlds. The following sections are organized according to four central moments or strategies described by our participants: 1) the **interpretation** of caste inscriptions sedimented or mobilized in situated contexts; 2) the **interruption** of caste narratives and assumptions; 3) the **ambiguation** of caste identities within and beyond the workplace, including through various forms of deflection and passing; and 4) the **finding and building** of caste communities through the reading and deployment of often subtle caste codes and markers.

As requested by our participants, we use pseudonyms for each person. Khushi is a software engineer in her early 30s with 10 years of experience in IT who currently works at a startup in Chennai. Priyam is a senior software consultant in his late 20s based in Nagpur with close to 8 years of experience in the industry and currently working with a multinational corporation based in India. Prakash is a senior tech lead at a multinational company in the UK in his early 40s and has been working in the industry for over

15 years. Each of these interlocutors, whose biographical accounts we explore in further detail below, come from different regions of India. They have a varied set of experiences that have shaped their understandings and strategic navigation of caste relations in the industry, and are 'out' to varying degrees. For example Khushi, originally from Tamil Nadu, shared in her first conversation with us, "*I kind of tell everybody I am Dalit now*" (emphasis ours) conveying her shift from an earlier strategy of obscuring or hiding her Dalit identity. On the other hand, Priyam was the most careful participant in our study, and never revealed his full name or the company he works for, as his strategy is to never reveal his caste at the workplace (even to other Dalits). Lastly, Prakash reported a strategy of selectively sharing his caste with other Dalits but not with upper caste colleagues; he agreed to talk to us only when the interviewing researcher revealed her own identity as a Dalit.

4.1 Interpreting Caste Inscriptions

As established earlier, perceptions of the castelessness of computing are correlated with upper castes seeing themselves and the industry as a whole having transcended the limits of caste, a story aided by absence of formal caste reservations and allocations through formal HR and hiring processes. This did not however eliminate the myriad ways in which caste appeared and was referenced through many of the less formal dimensions of collaboration and interaction both within and outside of computing workplace cultures. The variable awareness and sensitization to these dynamics meant that upper-caste individuals could (and frequently did) experience these computing environments as casteless, while those from lower castes faced with the challenge of navigating and fitting into these worlds from the standpoint of marked bodies and subject positions could 'see' dimensions and expressions of caste that were largely invisible to their upper-caste colleagues. An important strategy for surviving and negotiating their place in such a context involved a process of learning to sense and interpret inscriptions of caste, including by picking up on subtle cues that stamped contexts with particular, if often unnamed, caste affinities.

Sometimes caste inscriptions took the form of Brahminic values and practices normalized and codified in the infrastructure of the workplace. When Khushi was working at a renowned MNC, one of the senior managers expressed surprise at the fact that she was a non-vegetarian. He asked, "*Are you not a Brahmin?*" Khushi said no. Khushi suspected that maybe her long face and a relatively fair skin-tone compared to Tamil Dalits had something to do with this. She also noticed other caste norms at her workplace like different plates for vegetarians and non-vegetarians, a different non-vegetarian cafeteria and separate microwaves for heating non-veg food brought from home. In the mess, non-vegetarian food was available only once a week. These subtle marks of distinction and the increasingly vocal support for Hindu nationalistic politics among her colleagues, mostly Brahmins, started making her uncomfortable and eventually led her to quit the company altogether⁵.

⁵Non-vegetarian food is not strictly eaten by lower castes in India, but is overwhelming associated with lower castes as a characteristic or a marker of their identity. See, inter alia, Guru's discussion on the construction of the "savage" among Dalits by Brahmins in Maharashtra, for example [59]; or the critique of the hidden caste politics of vegetarianism by Gorringer and Karthikeyan [54].

The relationship between caste and merit - understood in terms of ranks in engineering exams - was encoded firmly in the infrastructure of Prakash's college. Each student was assigned a hostel with an associated mess hall (food hall) for meals based on their rank in the engineering entrance exams. The General category would thus get first preference for the hostel and most upper castes ended up in the same mess. Consequently, the mess with the worst food would be assigned to SCs and STs, as their grades were not always as competitive. Prakash was often asked by upper caste students, especially in his first year, about his assigned mess. He was embarrassed to admit that he went to the Royal mess. It indirectly indicated how well he performed in the exams and thus became a proxy revealing his caste category. Prakash sensed that upper castes saw those who went to that mess as being worthless. This infrastructure hardly enabled any co-mingling between the upper-caste and lower-caste groups, each mess producing its own silo.

These processes of learning to 'see' caste in the material and discursive practices of computing workplaces were replicated in other participants in their responses to our study. More often than not, they emerged in the form of a valorized sense of merit and self-worth achieved by questioning or looking down on those availing reservations. Other times it was someone trying to make caste legible through different markers to know if you are upper-caste. A participant from Gujarat reported being seen suspiciously for eating non-vegetarian food during lunch at work (as upper-caste Gujaratis rarely eat meat) and worked hard to veer conversations in directions that avoided the topic of caste. Other participants were asked questions about religion or what temple they frequented. If their last name didn't indicate caste clearly, they were asked about their region, village or city of origin⁶. A couple of our participants shared instances of colleagues openly declaring their Brahmin status in the computing workplace, while sometimes playfully rubbing the shoulders of others to check for the sacred thread worn by Savarnas⁷, especially Brahmins. Some participants reported having learned to understand caste by noticing the differences between them and upper-caste colleagues in college and the workplace, including the presence of networks of mentors who helped upper caste students find jobs, prepare for exams, and other forms of professional support and development. To successfully navigate an upper-caste dominated computing culture, it is critical for Dalit engineers to first learn how caste is being inscribed in a moment or in space. In particular, invocations of caste in the form of merit, or food, or place of origin or religion, etc. are normalized as innocuous but have a deep effect on Dalits who know that these inscriptions are also used to make their caste location legible and thus must be carefully managed to avoid unwanted consequences.

⁶Surnames in India and more generally in South Asia, can sometimes be associated with caste location, but sometimes not, and the attribution is further complicated by regional variation. Lower caste communities have also historically changed surnames to pass under the caste radar (see [96]).

⁷The Indian caste system is made up of four 'varnas' - Brahmins, Kshatriyas, Vaishyas and Shudras. Communities which belong to one of the four varnas or classes are called savarna. Most of the OBC castes are savarna as they belong to the Shudra category. SCs and STs are seen to be outside the caste system and thus are 'avarna.' See, inter alia, [7] for more.

4.2 Interrupting Caste

A second strategy deployed by our participants was *interrupting*, in which they decided to break the flow of assumptions that came with computing being a space dominated by upper castes and Brahminic sensibilities. The veneer of castelessness was frequently broken by perceptions of who is competent or deserving; in response, our participants sometimes chose to interrupt Brahminic ideas of meritocracy with their own forms of assertions that validated their existence in this space and affirmed their belonging. Assumptions of meritocratic claims were often interrupted by our interlocutors but these moments also posed significant risks or frustration for them.

Priyam encountered the disdain for reservations more intensely in Kota where he was preparing for competitive IIT-JEE exams, as the stakes for entering the top engineering institutions rose exponentially. Coaching classes in Kota have a hierarchy of batches based on the performance of the students. Priyam was in one of the foremost batches with good grades, but he once encountered someone from another batch claiming they would have gotten into IIT if there were no reservations. Priyam politely disagreed with him, saying that even without reservations it is not easy to get into these institutions. To which the person asked Priyam "*Tujhe mil raha hai kya? (Are you getting it (reservations)?)*" Priyam said "*Haan (yes.)*" The person then turned to Priyam agitated and said "*Aise toh nai hona chahiye, tum... tum deserve hi nai karte. Yeh kya hai? (This is wrong/It shouldn't be like this... you don't deserve it... what is this?)*" A mutual friend came to Priyam's aid to break the tension and later apologized on behalf of their friend. The next day, the same person who said that Priyam and people like him didn't deserve to get into these institutions through reservations asked jokingly, "*Hey [Priyam], ask your father to adopt me no?*"

Prakash experienced explicit casteist comments from his Brahmin colleagues as he worked for a multi-national corporation in the US. In a meeting to discuss revenue strategies for meeting the projected numbers that quarter, one of the managers addressed Prakash, saying, "*I will onboard yaar (hindi expression of exasperation)... I will... kisi Bhangi ko bhi daal dunga (I will hire anybody, even a Bhangi⁸)*" Prakash stopped him in his tracks saying, "*Kiran, stop it. You cannot say this word. It's offensive.*" Kiran was shocked and started apologizing profusely, saying it was wrong of him to use the term. But the next thing Kiran said was, "*But I am also OBC. My name sounds like Brahmin but I'm OBC Brahmin*"⁹ When Prakash asked what that meant later, Kiran said there are some Brahmins that come under the OBC category. Unsure of how that was related to the comment he just made, Prakash nevertheless asked him how that categorization worked. Kiran tried changing the subject and the conversation ended there.

In the job that Khushi took after she quit the Brahminical organization, a project manager complained that because of reservations,

⁸Bhangi is a jati (sub-caste) that falls under the Dalit/SC category. It is also used as a slur by upper castes.

⁹Other Backward Classes or OBC is not strictly a caste category but a socio-legal category that encompasses a variety of castes seen as backward, which can be different across regional and spatial contexts in India. Thus, there are indeed some Brahmin castes that are regionally classified under OBC. In this context we suspect that Kiran wanted to establish his affinity with the Bhangis by citing his OBC status. Some people have questioned the arbitrary nature of this nomenclature for clubbing many different jatis/sub-castes across the hierarchy together [139].

someone from Scheduled Caste with marks lower than his wife got a government job. He said, *"You know, reservations don't let deserving people get their due. Now my wife will have to go ask this Scheduled Caste woman for her help."* His tone clearly insinuated that this was unfair or beneath them. Despite being from the OBC (Other Backward Castes) category, who also benefit from reservations for their community, the project manager found reservations for Scheduled Castes undeserving. Khushi responded curtly, *"Do you know why reservations are there? it's a right for everything that we have gone through for so many years, it's a right for our community."* Khushi came home that day and shared this incident with her family in tears. Her father responded consolingly, *"Now, you understand why I am advising you to not tell our caste to people. You will miss opportunities because of it if you don't be careful. This is the hatred against Dalit people. If an OBC person was selected for that post instead of the SC, they wouldn't have bothered or reacted this way. But because she was SC, he is resentful."* Luckily for Khushi this manager quit the firm soon enough, but it made her rethink her strategy of claiming her identity at work, adapting a different one that made room for ambiguity.

We saw this strategy of interrupting claims of merit by upper castes replicated by other participants in our study. When a colleague confided their suspicion that a Dalit Christian was promoted instead of him because the boss was a Dalit Christian, one interlocutor responded by listing the accomplishments of the person who was promoted. In another case, a Brahmin senior manager described the caste system as a wonderful thing to an American colleague during a business dinner, where Brahmins were like managers, Kshatriyas look after security, Vaishyas look after the business and those at the bottom take care of the servicing. Our participant interrupted this theorizing by pointing out that the caste system doesn't present a choice to a sweeper or a janitor who were denied education and seen as untouchables for centuries. Other participants confronted upper castes who accused Dalits of getting technical degrees and jobs with no effort by detailing struggles for food, water and shelter, and of the discrimination they face everyday, the kind of baggage Dalits have to carry as they make their way into the industry. These everyday interactions and invocations of Brahminic ideas of merit and caste by General Castes, and sometimes OBCs, were not easy to interrupt. Some of these emerged as reactions to the accumulated frustrations of being insulted or looked down upon over a period of time in a culture dominated by Brahminism. These interruptions were always risky to perform and sometimes led to backlash or anxiety of potential backlash for our participants.

4.3 Ambiguating Caste

A third strategy involved subverting caste inscriptions by artfully ambiguating caste legibility. For moments and inscriptions that tried to pin down the caste of our participants or ascertain where they belonged in the caste spectrum, some participants adopted a strategy of responding ambiguously to such questions or avoiding moments of caste disclosure. This strategy was formulated in-situ and sometimes presented a form of gamble on behalf of the participants as the performance of castelessness led to uncertainty around whether one has successfully ambiguated caste inscriptions or not. The following instances will demonstrate the highly contingent

nature of these strategies and how this uncertainty felt for our interlocutors.

In a conversation about ranks in engineering entrance exams Khushi's classmates were comparing their ranks and discussing what fields of engineering were available to which ranks. Khushi was listening in on this discussion when one of the girls turned to her, *"Okay, well what was your rank?"* Khushi said, *"Oh, I don't remember,"* deploying her now-trusted tactic of ambiguity to keep conversations of caste at bay. Khushi's rank in the 6000s would seem to pale before the 600s of the General Category students, making it obvious that she hailed from a reserved caste category. It is common practice in engineering schools and circles for upper caste students to compare and ask each other's ranks. Khushi said there were multiple instances of such discussions but after her response the first time, they never asked her again.

For Priyam, the discussion of caste came up on the first day of joining IIT-Kharagpur as the boys in the hostel were getting to know each other. As Priyam joined the group he heard one of the upper caste boys say, *"IIT Bombay professor ne bola hai ki reservation se quality kharab hoti hai (IIT Bombay professor said that because of reservation the quality [of students] is worsening)." Priyam knew that IITs would have 50% lower caste (OBC, SC and ST) students thanks to reservations but recalls that, "Nobody [came] to the defense obviously because we were just afraid of, you know, being outed [...] they would just ask your rank. But you could just, you know, not [...] mention your category... but then I felt very bad about it, because that's kind of a deception. That's not something I wanted to do at that point of time. But I guess it's better in the long run."* The strategy of ambiguating left Priyam feeling uncomfortable, but it also gave him the freedom to not be pigeonholed into a marked category.

Later when he joined an American MNC dominated by an upper-caste population, a lot of whom were leaning towards narratives of Hindu nationalism or Islamophobia, Priyam adopted a different tack to pass among the upper castes while staying true to anti-caste sensibilities. *"... I would publicly take pro Muslim stances; I think it would have been a subconscious proxy of my pro anti-caste credentials. [...] I have made public remarks about caste. But I've never done it in such an explicit way that you know, my caste identity is revealed. But I've been very, very vocal about Islamophobia."* When asked about his plans for celebrating Diwali¹⁰, Priyam responded that he doesn't celebrate it. He didn't reveal that he was Buddhist, but one of the co-workers remarked to the group present at that moment, *"You know mujhe pata hai yeh konse festival celebrate karta hai... yeh anti-national festivals celebrate karta hai... (I know what kind of festivals he celebrates; he celebrates anti-national festivals¹¹...)"* Priyam did not indulge the meaning of this statement. He couldn't be sure, but sensed that he meant Islamic festivals or Ambedkar festivals. *"I could have complained to the HR about this, there would*

¹⁰ A predominantly Hindu festival that celebrates the victory of Lord Ram in the great battle of Lanka in popular Brahminical discourse.

¹¹ A term that is pejoratively used for those who are suspected to support or encourage activities that challenge the unity or the idea of peace in India, especially from the perspective of the Hindu nationalism. This frames Muslims, Dalits or anti-caste activists, indigenous people, etc. as being seditious towards the national integrity of India when they talk about their issues. In this particular context this term is being used against Priyam for his protest against Islamophobic comments at work. Read more about the construction of this term in media discourse and its resurgence in India inter alia [9, 81]

have been action... But you know [...] all my friends would like... stop talking to me if something drastic would have happened to him. [...] So, there's this peer pressure that you know, you can't go against people who are deliberately making these [...] comments."

As Prakash became more senior in the company, he had to face fewer explicit questions about caste. But when he recommended a newly graduated Dalit woman for a job at his company, one of the managers in the team enquired, "Hey, what's your last name again...?" Prakash's friend shared her last name. The manager then asked, "so your name suggests...? What is your caste? Because I am a Brahmin from Karnataka." Prakash's friend was taken aback as she did not expect this to be the first question to be asked in a new team. She responded awkwardly, "No, I'm not a Brahmin." To which the manager edged further, "Maratha, Maratha? Maratha vagere hai kya?" (are you like the Marathas? – an OBC caste from Maharashtra) Prakash's friend again responded with a no. She didn't share her caste and politely excused herself. She walked over to where Prakash was standing in the workspace and confided what had just happened with her. Prakash reflects on the difficult position this put his friend in: "Now obviously she has to co-work and become friends with this [person] because [they are in the same team.]"

We found that almost all of the participants, at one time or another, had adopted the method of ambiguating their caste location when asked about it in the worlds of computing. Many admitted to being nervous about how they would be perceived once their colleagues knew that they were SC or how it would affect their career growth. For a couple of our participants who were Buddhists, declaring they were Buddhist was sometimes a good gamble as most people outside of Maharashtra and some parts of Karnataka are not fully aware of the neo-Buddhist subculture of Dalits. One of the participants responded with a city's name as his place of origin to obfuscate his caste location, as it is difficult to map someone's caste in an urban setting. For another participant, when asked if he was Maratha (an OBC caste,) he simply said yes, thus avoiding further enquiry and prying from his colleagues. Another participant made sure to never speak about her family to her upper-caste friends in college so as to not give away markers of being Dalit. Other participants had names that supported ambiguity; one participant's parents gave him a Tamil Brahmin name, while other participants were able to pass as upper caste in many situations because their last name is associated with both upper and lower castes. Another participant's husband suggested taking down the images of Ambedkar, Buddha and Phule in their homes before their co-workers arrived, keeping in line with his strategy of "not stirring the pot", i.e. not disclosing your caste when not necessary.

4.4 Finding Caste Community

The last strategy played with caste legibility by interpreting signals and learning to give them to find other Dalits in the worlds of computing. This tactic too needed improvisation on behalf of the participants in-situ as well as a great amount of risk and uncertainty around whether one has interpreted signals and caste location of the other person correctly. The following instances will demonstrate the risky and contingent nature of finding other Dalits, the effect it had on our participants and the dilemma it sometimes posed because of the significant risks for Dalits in claiming their

identity in computing. Prakash describes his college experience as a game changer for his development. He got into a government college in Maharashtra and it had a Babasaheb Ambedkar Students Association. "This community became a place for us to talk to other [lower caste] people and you know, understand the problems and all that. [...] We teamed up, all of us came together [...] and our aim was that all of us, especially the people SC, ST, OBC community, should come together, talk about how to prepare for campus interview, technical round, group discussion; because although we are good in technical things, we are not good in interview and group discussion... [...] That student body was very important for us... it gave us the confidence that, you know, we can also achieve like these upper caste friends and go far. Many of them are now in the US, some of them are in very, very high positions now... all my SC friends."

When Prakash joined IIT-Bombay for his master's, he couldn't find an Ambedkarite association among the students but he found that the non-teaching staff at the third or fourth level in the hierarchy were all Dalits. These employees had a very strong community called NASA (Non-Academic Staff Association) and most of them worked in the mess. Soon Prakash observed that some of the servers had a tattoo of Jai Bhim on their arms and they greeted each other with "Jai Bhim". Excited to find other Ambedkarites, he joined them in saying Jai Bhim when he would see them on campus. The practice became customary and prominent on campus, where some other Christian students also started using the salutation. The staff told Prakash excitedly that this was the first time they were seeing students who were openly saying Jai Bhim. Before Prakash's time, they had rarely seen Dalit students in IIT-Bombay.

Ambedkar continues to be a symbol of claiming and finding other Dalit or lower caste folks even at work for Prakash. During Ambedkar Jayanti, Prakash puts up a photo of Babasaheb Ambedkar as his WhatsApp display picture. On one such occasion, a co-worker who was sitting next to Prakash happened to notice Babasaheb's picture on Prakash's whatsapp. The co-worker asked Prakash, "Hey, aap Babasaheb ko follow karte kya? (Are you a follower of Babasaheb?)" Prakash responded, "Yes." After a couple of days, his co-worker confided in Prakash saying, "I'm from Karnataka and I am from a caste that comes in OBC." Prakash was grateful he admitted to being an Ambedkarite as it led him to meet another lower caste person at work.

For Priyam, college was the first time he was sure he could count on having other lower castes in his vicinity. "...In IITs half of them are reserved, you can [...] hold your position, and [...] at least half of the students will have your back. So, it's not like there's going to be a fight but at least, you will be confident enough to put your own thoughts. [...] Yeah, because half of the students were there looking over you... it was a safe space when I was there. I could be very comfortable with my caste identity at that point of time." Priyam became friends with someone from Chandrapur, which was a district next to where Priyam grew up, as they were from the same hostel. Priyam guessed that he too was Dalit but wasn't sure, so he shared that he was Buddhist in the hopes that his friend would pick up the cue that he too was Dalit. To Priyam's relief, he chimed in. His friend never said he was Buddhist, but they discussed at length how empowering Buddhism can be for some communities. After this episode, he introduced Priyam to other Dalits in the university.

In fact, learning to pick up on cues to identify other Dalit people from college helped him find Dalits in the workplace. He was listening to some co-workers talking about buying a house when a co-worker from Mumbai remarked that, “*Main toh kamgar colony mein badaa hua tha (saying that he grew up in a worker’s colony/house (Kamgar Colony).)*” The two people in the conversation were upper castes who didn’t seem to have picked up on this comment and continued the conversation. Priyam, on the other hand, became curious to validate his interpretation of this cue and started following the co-worker on Twitter. He saw some posts that made him think that his co-worker was sympathetic to the anti-caste cause or the rights of minorities which made him think his assumption was correct. He second guessed himself slightly because recently he had started seeing a lot of upper castes being sympathetic to the anti-caste movement. This was radically different from what he had seen while growing up where almost all upper castes he knew were anti-Dalit. How could he be sure that he was indeed Dalit?

Then, after a couple of weeks of following him on Twitter he came across a news article that his coworker shared about the life expectancy of Dalits working as sanitation workers (or manual scavengers) to be as low as 40 years. He shared his article with a quote “*Majboori hai... karna padta hai. (It’s a necessity/ compulsion/ helplessness... (we/one) have/has to do it.)*” This confirmed that he was most likely Dalit. At the same time, Priyam wasn’t sure if this co-worker knew that he was Dalit too. Priyam found it easy to talk to him and felt comfortable knowing he had another Dalit co-worker, but at the same time the fact that he didn’t know Priyam was Dalit made him slightly uncomfortable. “*I felt this very unusual balance of power, which is not in his favor when I completely knew his identity, and he did not... And I did not want to tell... So even at that point of time, even if I was 100% certain that he was Dalit... I... I still wouldn’t want him to know at that point of time. [...] I really didn’t know [if it was the time or that place that made me not want to do it]... But I didn’t want him to know, I knew that.*”

The work of finding caste communities through subtle codes and signals was also reflected in the stories of other participants in our study. Many of our participants picked up on last names and approached other Dalits in their workplace or college. A lot of our diasporic participants were part of Ambedkarite organizations which helped them find Dalit computing professionals within their company as well as outside. Two of our participants ended up gravitating towards and becoming friends with the other SC students in their class, due to how out of place they felt in comparison to other students. Another participant described a detailed process of noticing who frequented the office of “freeship” (scholarships for Dalit students) on their university campus to find other Dalit students. Our younger participants spoke about finding other Dalits on Twitter and Facebook through signals like anti-caste perspectives and symbols like Ambedkar’s picture. Very few participants spoke about finding other Dalits through their workplace, most likely because of the pervasive performance of castelessness by upper castes that they also keep up with to protect themselves.

5 DISCUSSION

What can we learn in HCI and computing from these experiences and strategies of negotiating caste within computing cultures?

While one must exercise caution in translating across regimes of inequality [3] - and the goal and structure of this study is not comparative - we nevertheless believe that the dynamics of caste in computing explored here may provide insights that are relevant and complementary to other categories of historical marginalization, such as race, gender, class and ability, which have been more thoroughly explored within HCI. This is all the more so as existing research related to historically marginalized groups in HCI to date has arguably been more centered on North American experiences and discourses of identity [101]. Thus, attending to caste in computing may serve a double function in the field: in foregrounding a central, potentially widespread, and heretofore understudied vector of privilege and inequality within the field; and in bringing to light a set of alternate dynamics which may offer comparative perspective, through both similarity and difference, on *other* experiences of marginalization and inequality that the field is also urgently grappling with. A fuller accounting of these comparative possibilities lies beyond the scope of the present paper and remains the subject of ongoing work.

In this discussion, we describe three aspects of navigating historical marginalization which emerge from a careful examination of Dalit experiences and tactics in the spaces of computing as described above. First, we discuss how the stories in this paper reveal contradictions within narratives of castelessness (and other unmarked universals?) in computing, and, as a consequence, how the encounters of Dalits within computing can be used to reframe contemporary manifestations of the relationship between computing, caste inequality and professionalization in India. Second, we describe how Dalit ways of acting within computing are rooted in a performative and relational understanding of caste, which subverts understandings of caste identity as an inherent and stable category of being. Third, we describe “caste work,” or the labor that is involved in the artful navigation of caste by Dalits within computing cultures structured by notions of casteless/upper-caste merit. We then return to questions of marginalization and identity in HCI, to reflect on how such relational and performative understandings of caste might inform how HCI both conceptually and pragmatically addresses marginalization.

5.1 Dismantling The Myth Of Castelessness In Computing

In the stories above, we witness the different forms that caste encounters take in worlds of computing and how the Dalit engineers in our study navigate the lines of caste in everyday life. They learn to sense and interpret caste inscriptions, interrupt meritorious claims in worlds of computing, ambiguate caste legibility to avoid being identified as Dalit, and find caste communities through subtle signals and cultural markers of caste. Their experiences stand in stark contrast to the purported ‘castelessness’ of computing, which begins instead to reflect not a feature of computing worlds writ large, but rather an experience following from a distinct caste location - namely, that of upper castes reflected under the ‘General Category’. This seemingly universal casteless norm, produced and stabilized through an erasure of General Category caste specificity and historical privilege, is contested and revealed through the experiences of Dalits in computing. In these cases, we see the unmarked universal

becoming *"the abode of normal, naturalized power, its transparent invisibility being a sign of its privilege"* [38, p. 38]. Dalit engineers in our work find themselves particularly marked by their caste and rendered precarious vis-a-vis the universal of unmarked General Category engineers.

Ambedkar's work located the centrality of caste in Hindu scriptures and called for the annihilation of caste through to bring crucial social reform in India [6]. Since then the movement to abolish caste as well as modernize India has failed to truly annihilate caste by guaranteeing anonymity in caste terms to upper castes [38]. As we have seen in the stories so far, the project of annihilation of caste, when interpreted as castelessness that erases the caste specificities of upper castes rendering lower castes as 'caste-ful', makes it more of a *"disabling dream than an empowering utopia."* [38, p. 36]. Deshpande underscores in his analysis that the roadmap to the utopia in the modern context entails understanding how upper castes are able to claim the ideal of meritocracy and castelessness and to attempt to break this false universal [38].

Our emphasis on the modernity of caste - its presence as a live and evolving system of hierarchical distinction, and the ways in which it is (re)constituted and (re)produced on an ongoing basis, including in industries most commonly associated with 'the future' - runs against a retrograde reading, in which caste is relegated as a residual or vestigial issue of the past: perhaps still unfortunately with us, but soon to be eclipsed. It also runs against readings which would place caste as a creature of the purely social world with little bearing or force within the practice of computing workplaces themselves. Such retrograde readings, buttressed by strong claims and a perhaps excessive faith in meritocracy, have the effect of rendering Dalit experience invisible, while normalizing the standing of upper castes in the scientific and technical professions in India. By this account, such achievement and standing has nothing to do with caste identities, which are incidental or irrelevant to the real story of merit which led them into top positions in these professions. With reservations, as well as other socio-political gains made by lower castes in the recent years, a number of them are now making their way into professions and spaces (like computing) traditionally dominated by upper castes, beginning to complicate and push back against the putative castelessness of computing experience, and giving rise to more and more stories (and more and more actors) like the ones featured here. As Deshpande describes, this experience can be unsettling: *"Long accustomed to a comfortably homogeneous environment populated almost entirely by people like themselves, this group is unsettled by the recent arrival of hither to excluded and therefore strange and unknown social groups in their vicinity."* [38, p. 39] As more Dalits and lower castes make their way into science and technology, specifically in computing with its hierarchical relationship to merit as outlined in the background, it is important to understand and give valence to the stories of how Dalits experience worlds that have historically been *Agraharas* - spaces that are strongholds of upper castes and in particular Brahmins.

In addition to underscoring the role of upper castes in maintaining the lower status of untouchables by, one of Ambedkar's foundational and enduring contributions to the anti-caste movement is reframing the struggles of the untouchables against this system of control into a movement for freedom by proposing the utopia of annihilating caste. In initiating a movement to convert to

Buddhism with other Dalits in a mass conversion event, he started a movement of assertion of rights to dignity and agency within a system that codified Dalits into the lowest rungs of society [14]. He worked towards articulating and asserting his experiences as a Dalit person from Maharashtra within the legal and social frameworks of then-colonized India, to chart a route of Dalit emancipation despite significant pushback from upper caste nationalists who saw freedom from British colonialism as the central and sufficient answer to the inequalities and social evils of India [6]. This expansive idea of freedom was derived from the everyday experiences of untouchables, which were then thought through in a pragmatic way to formulate a newly self-empowered category of Dalits capable of claiming agency and reparations based on a wider understanding of the violence of the caste system in India. Thus, his wider political project - of moving from a 'politics of suffering' to a 'politics of agency' - was founded centrally on the transformation of everyday caste experiences into the construction of a new political subjectivity that was seen as an essential waypoint in the wider and longer project of annihilating caste.

In our work, we found a similar spirit of the everyday negotiation and reformulation of caste experiences by the Dalit engineers in our study. These everyday encounters posed both burden and opportunity. As they grappled with the historicity of being untouchables, they simultaneously challenged the confines of caste legibility with tactics of interruption and subversion. By playing with the boundaries of caste, they made space, if sometimes only a little, to navigate computing on their own terms, engaging and disengaging strategically with questions of caste, alternately passing within and claiming caste identities. Our participants found both humor and an ambivalent freedom in moments of ambiguating their caste location (for example, by agreeing to being a Maratha when asked about caste directly), while their voices rang with excitement when they narrated stories of finding other Dalits on campus who said "Jai Bhim" out loud. These strategies are witness to the ways in which lower castes challenge casteism in computing simply by navigating and surviving these worlds on an artful and everyday basis. They also suggest an important politics of presence [98], whereby the potentiality of alternate and more inclusive computing worlds unfolds in part through everyday tactics of navigation, negotiation, and participation - a point only partly captured under the cruder metrics of representation that have sometimes framed and limited institutional thinking and initiatives around diversity, equity, and inclusion [3].

5.2 Caste As A Relational Performance

How can the experiences and strategies of Dalit engineers help us more deeply understand how people inhabit, reject, and work with and around categories of historical marginalization? Their learned, supple and contextual deployment of caste challenges any stable notion of caste as a fixed and inherent identity. This reflects in turn a recent evolution in scholarly understandings of caste which has emphasized the phenomenological or experiential, rather than ideological or ontological, nature of caste. This allows for caste to be understood more as an ongoing social encounter through which lines of distinction and inequality are constructed and reconstructed, rather than as a religious ideology or inherent

property of a person that *just is*. For example, when Brahmins see Dalits as 'untouchables', caste is enacted by ascribing morality to touch, and thus produced as a characteristic of the skin boundary. When the adjective 'untouchable' is transformed to a noun, caste moves from a property of the skin (or the body) to a property of a person who becomes untouchable [117], effectively 'ontologizing' caste. Thus bodily inscriptions of caste become ways in which caste is made *legible* and a social distinction produced: a touchable upper caste articulated vis-a-vis an untouchable Dalit. Similarly, in our study we find that the markers of caste like food, region, cultural norms, sacred thread, engineering ranks, religion, region, etc. render legibility to the register of caste categories. Such an approach sees caste as an ongoing and perpetually (re)produced construct that covers its own tracks by naturalizing the outcomes of this encounter, including by shaping senses of both self and community (including the definition of in-group and out-group members).

In our own empirical study we see caste categories of untouchability and caste/out-casteness as not stable but relational entities constructed in-situ through social encounters in worlds of computing - themselves in turn one part of a much larger pattern of caste performances across the social order at large (though essential to the question of what it means to be a Dalit *engineer*). We saw this, for example, in the case of Priyam who engaged different sides of himself at work and in college depending on how safe he felt opening up about being Buddhist to other lower castes. *How* and *when* the boundaries of the body become the limits of the social - and how and when this move is resisted, deflected or worked around - is crucial to understanding inscriptions of caste that continue to exist in modern India. The individual meaning and practice of Dalit identity is constructed and evolved through ongoing interactions rather than assigned in a fixed and unitary way at birth. This work is performed largely with people from other castes, either through negative feedback, or by noting differences in actions and values. This requires that our participants learn to read encounters of caste and/or to notice differences between their community and others. Thus, Dalits in worlds of computing learn to interpret how boundaries of their bodies shape the nature and limits of their participation in computing fields, through everyday encounters with, and interpretations of, caste inscriptions.

Dalits in computing also *subvert* caste legibility by learning to process caste categories through careful attention to how caste registers operate when employed by both upper caste and Dalit people. This happens in moments where they first encounter caste discrimination, untouchability, or caste difference. Their stories portray the process of fine-tuning one's senses and interactions to recognize when someone is asking about caste (including by proxy), learning to identify difference in treatment, recognize a caste-based remark, or notice interaction within the background of their caste identity. Through this process, they identify implicit or explicit cues for caste in colloquial or common parlance. This process also involves learning instances, terms and symbols that serve as a proxy for caste in two different ways: 1) when Dalits want to signal or pick up signals of caste position to each other or other Dalits unknown or to people in general without explicitly saying they are SC; and 2) when upper castes talk about caste without saying the word caste. For example, the range of performances between ambiguitating caste

and finding caste communities for Priyam helped him obfuscate his caste location when necessary, but also helped him identify other Dalits by training his senses to the strategies of subversion that invoke caste implicitly, such as in language of 'Kamgar Colony'.

As these arguments will suggest, our analysis of the strategies adopted by Dalits to navigate worlds of computing is also *performative*, in a sense that echoes Judith Butler's arguments around the performativity of gender. Like the account of (caste) identity sketched above, Butler argues against a psychic or internalized reading in which gender stands as a stable and naturalized counterpart of the sexed/gendered body, suggesting instead that gender - as both individual experience and wider social category - is *performed*: enacted and re-enacted through moments of social and worldly encounter. This gives it both an obduracy or relentlessness, but also a creative potential and perpetual (if frequently challenging) path to creative re-appropriation: if gender has no fixed ontological status apart from the various acts which constitute its reality, then it is also vulnerable to the possibility of subversion - for example, in forms of drag that effectively mock both the expressive model of gender and the notion of a 'true' gender identity. This instability lies precisely at the intersection of individual action and experience and the wider social category; as Butler observes, "*The performance of drag plays upon the distinction between the anatomy of the performer and the gender that is being performed.*" [26, p. 54] Thus drag and other subversive performances of gender seek to render gender as we know it incoherent, 'annihilating' gender (in Ambedkar's phraseology) as a fixed, stable, and naturalized category of being.

By arguing that caste should be understood as a relational performance, we make space for the idea that to be Dalit or to be Brahmin is to repeat a series of performative acts, gestures and enactments in social space. It is also a negotiated performance that engages multiple forms of the self [22, 84, 105]. Thus, the everyday experience of caste for Dalits is not just about oppression, pain, or 'damage' [131] but includes an attachment to a way of being that is not always stigmatized and can also hold value and meaning [52]. As in drag, Dalits in our study play upon the distinction of bodily inscriptions of caste identity (assigned by genealogy and seen as static) and the caste that is being performed even within 'casteless' worlds of computing. By adopting multiple strategies of caste interruptions and subversions, Dalits play with the boundaries of caste to challenge the idea of a stable caste legibility in computing, while navigating their ordinary worlds in the best way they know how. We saw this in Khushi's case as she refused to share her engineering rank and in the case of Priyam who adopted the strategy of proxying anti-caste views with pro-minority views at work.

5.3 Doing "Caste Work" - The Labor Of Interrupting Merit And Subverting Caste Legibility

If the master narrative of caste in the worlds of computing is that of castelessness, and the process of becoming a naturalized member requires you to be 'casteless' [23], then Dalits challenge the idea of a stabilized, clean, pure, universality of casteless computing by their mere existence, requiring an artful and subversive performance of caste in everyday life as computing engineers. The artfulness by

which we see Dalit engineers negotiating interruptions of merit or subverting caste inscriptions is highly context-dependent and not necessarily stable. It is also not cost free. The normative and nominal castelessness of computing thus requires considerable effort for Dalits to fit into – often achieved by diversionary strategies such as avoiding conversations about caste, or utilizing ambiguity to not exactly lie but also not entirely claim their position. These performances are not without risk, and some degree of felt sense of precarity was a condition underwriting the experience of many of the actors in our study. So, for example, Priyam couldn't bring himself to admit to his colleague that he was Dalit, even after the Dalit identity of his colleague was confirmed.

These strategies of artful navigation also take a considerable toll and exact an extra burden of work on those who are marked by caste, in our case Dalits, interloping in worlds of upper castes who may see themselves as more comfortably and unproblematically casteless. Bowker and Star [23] have advanced the notion of 'torque' to explain the costs imposed on those out of alignment with normative categories. Torque names the additional friction and labor involved when traveling *against* rather than *with* the grain of the world around you (including as given at the level of categorical distinction, infrastructure, and everyday assumption); the work - and sadness? - of navigating a world not quite made for you. Experientially and over time, the cumulative effect of this may be what we'll term the *weariness of difference*: the sheer accumulated weight of this navigational work and watchfulness, the perpetual labor of passing and translating between worlds, and the long-term exhaustion of making and holding spaces in which one's caste and workplace identities can cohere and coexist. This too must be recognized and accounted for as a real barrier and break on belonging and advancement.

Importantly, this work confronts individuals *not* marked by caste in a very different way, or perhaps not at all (though other lines of division like gender and class can of course bring forms of torque all their own). The casteless universal, especially where buttressed by powerful narratives of meritocracy, can invoke caste inscriptions from a place of rightful assertion in the form of judgements, slurs, ranks, and a sense of personal deserving-ness. They can assert the idea that merit is signified by entrance exam scores, grades and English-speaking ability and construct those lacking or struggling with those metrics as unmeritorious. In contrast, the artfulness which Dalits negotiate caste is grounded in knowledges that are gained through long and often painful experience. In particular, the notion that caste is tied to competency is most hurtful for Dalits, who have had a long fight to regain their dignity and assert their humanity. This idea is most painful and insidious where (partly) internalized. The cumulative cost and burden of this work is reflected in different ways in each of the participant quotes below:

“And I was like, always felt like I'm being judged. I felt like I didn't belong. Because I came in the quota [reservations.] [...] So I think those years... Now that I think of that time, like, I think there was so much shame in my community. [...] I was suffering from so much inferiority complex actually. So that is why it was actually very depressive. So everything about me

was.. [looked down upon]. So I just felt like my whole existence was very painful” - Khushi

“As I grow older, as I move... [to the] place I want to move [to]... obviously, there'll be even fewer Dalits there. [...] I may have to hide it... [...] I don't care about hiding, but I do care about not finding people from my community. Who would understand... [...] who would know that [pain and difficulty that comes with being Dalit]... that's, that's hard. That will be harder and harder. I'm sorry about that.” - Priyam

5.4 Performative identities within HCI

Caste is a rich site for HCI to examine how identification with categories of historical marginalization are constructed and performed interrelationally in computing cultures in ways that both produce and subvert marginalization. Within Western contexts, caste is often thought of as similar in many ways to race, as reflected in Wilkerson's recent influential analysis of race through the lens of caste [137]. Like caste, race is an inherited marker of social positioning. Historically, computing has been considered both 'raceless' and 'casteless,' despite implicit and explicit inclusion of those from marked categories. But caste is not the same as race. For example, caste is less likely than race to be associated with outward markers (appearance, names) whose interpretation travels easily beyond a home region of the individual's family. It is thus potentially easier to 'pass' as being of a different caste than race. As we have seen, questions around when, whether, how, and why to pass as upper caste in an ostensibly casteless space are a core element of lower-caste experience in a nominally casteless world. Emerging from considerations of caste experience is a performative, relational theory of caste identity, which highlights the differential labor of navigating caste performances for those marked by caste in an ostensibly casteless culture.

This biographical nature of making sense of caste in everyday life and learning what it means to be Dalit or inhabit the category of Scheduled Caste in computing environments is clear in the stories our participants told. Yet these biographical accounts are not necessarily teleological nor linear in how our participants choose particular strategies of being Dalit in the worlds of computing; that is to say it is not a progress narrative of arriving at a stable identity. In fact, many of our participants who have claimed their caste location openly in the past became more ambiguous about it later when they joined the computing industry. Others, like Khushi, who were more ambiguous about their caste in the past, became more vocal in their methods of interrupting and claiming caste, depending on how comfortable they felt doing so in a particular context. In our conversations with Khushi about her caste encounters in childhood, we found out that her family had adopted the strategy of ambiguating or hiding their caste when asked about it. After finding other Dalit activists online and learning more about caste, she started owning her identity even at work. She is also considering going back to adopting a more discreet approach after the encounter with her manager who blamed SCs for his wife not getting a job. Thus, her own contexts have evolved her sensibility of when to ambiguate or assert her caste and is in no way a linear trajectory. Or the fact that Priyam had become more comfortable

with his caste identity when surrounded by other Dalits in college, but now as a computing professional has adopted a different strategy which leads him to not admit to being Dalit to another Dalit at work.

The idea that one might be always 'Dalit' in the same way in worlds of computing across time sits in conflict with the relational and fluid nature of caste identification which we saw at play in this study. We recommend that authors and practitioners of HCI incorporate a similarly relationally and temporally situated engagement with categories of marginalization in research and practice of computing so as to capture the dynamism and fluidity of the concept. This relationality and fluidity raises questions about approaching identity in HCI as fixed, known data points about authors or participants. For example, work in HCI underscoring the importance of author disclosures of identity when conducting and writing up research [119] could suggest that authors or participants' ways of being can and should be associated with a list of stable identity categories in known relationships to each other. Similar assumptions underlie research that relies on the stability of participants' identity labels for its knowledge claims.

Our work highlights both the fundamental inaccuracies of understanding actors' relationship to group categories of marginalization as fixed, and the differential price associated with navigating required identity declarations for lower-caste participants. Our results here connect with recent work building on intersectionality that acknowledges the complexities of identities in voices that have been otherwise invisibilized in computing [44, 108, 128]. Building on Erete et al. [44] and Harrington et al [62]'s expressions of the complexity of Black experience, our work underscores that HCI and computing in general need to approach marginalization as situated and relationally constructed in-situ rather than as static, reportable entities which are an inherent, psychic reality. The Race in HCI collective points to the shortcomings of racialization, or assigning a person's inherent identity to a race category [101]. Analogously, our study draws attention to the consequences of what we might call 'caste-igation,' or a belief that caste is an inherent determinant of being for lower-caste participants, and how it is embedded in the ideas of merit and castelessness in South Asian computing.

5.5 Caste In HCI And Computing: A Way Forward

How could we begin to make computing and HCI spaces more open and inclusive along lines of caste, including in ways that reflect and honor the experiences shared here? First and foremost our study strongly suggests that computing and HCI are not casteless practices, and that caste is far from an outdated historical concept, continuing to shape everyday practices of HCI and computing. Importantly, the nominal castelessness underwritten with caste hierarchies in computing have rendered Dalits precarious as they occupy these spaces. We found that for many of our participants, caste inscriptions emerged in informal work interactions while its repercussions and effects carried over to the workplace or educational experience. Thus, understanding how caste relations at work can be formed outside of the workplace and how they can affect work relations within teams or career growth at work is a

crucial arena for exploring the otherwise invisible terrain of caste inscriptions in the worlds of computing.

Second, caste is usually left out or only nominally mentioned in the list of things employees cannot discriminate against in institutional policies, both in India and globally. There is a severe reluctance to talk about caste, which has resulted in a lack of data on caste and religion composition of the computing industry. While anti-caste thinkers differ significantly in their perspective of the value of a caste census for an anti-caste future, the claims of computing being dominated by upper castes, or Brahmins in particular, continues to be anecdotal and qualitative and thus dismissed by many stakeholders. Some scholars have argued for an effort to characterize the General category [38, 133] to better understand which castes within this group tend to be more represented in positions and spaces of power. This would be a more appropriate approach to turn the casteless gaze into a more caste-aware look at the fabric of caste and its norms within computing than focusing exclusively on lower-caste members. While in this study we focus on the experience of Dalit engineers, our future work will attempt to characterize the relationship between caste and gender by focusing on upper-caste subjectivity within computing. Ours is one of the first steps in drawing focus to questions of caste within computing and we hope that future work in HCI also takes up the project to characterize and study the understudied General Category with the field of computing and HCI as well as how relations of caste shape design of systems.

Third, a serious attempt at engaging caste as a relation that shapes the computing industry will require a deeper survey of attitude and practices to inform the way its differences are addressed. This requires an understanding and survey of the perception of affirmative action policies and the communities who avail it and trace its transformation over time within the computing industry. The demand for reservations for lower caste communities in the private sector has been long standing but this has not translated into upper castes understanding the *need* for reservations. We saw that in the rare instances where our participants interrupted the notions of meritocracy, some moments were followed by an awkward response from upper castes to this breakdown in the norms of upper-caste castelessness in computing. In the case of Priyam this meant that the interruption was taken as a joke, where the upper caste friend felt it was appropriate to ask to be adopted so as to avail reservations for himself. There is a dominant perception of Dalits being undeserving of educational concessions and wrongfully taking advantage of reservations to become part of the computing workforce. Formal education in India fails to contextualize ideas of merit and the history of reservations in India (particularly its evolution from the Poona Pact of 1932 [71]). Ambedkar-Phule Reading Circles in IITs have initiated an effort in this direction, but they remain volunteer-run, opt-in, informally organized groups. Thus formal and institutional college or workplace interventions to historicize the caste system in India and locating how caste is co-constructed within the science and technology industries is very important to truly shift the perception or gaze towards lower castes at scale.

Fourth, it is important to understand that professional subjectivity in computing is not only formulated and negotiated in the workplace. The stories in these studies reflect a significant range of

experience that take us beyond the workplace or college to home and family, as well as social media, reflecting the biographical nature of making sense of caste in everyday life and learning what it means to be Dalit or inhabit the category of Scheduled Caste in computing environments. The critical role of social media for Dalits to subvert caste inscriptions in the worlds of computing extends from the artful management of their caste relations at work or in college to utilizing it to find other Dalits in computing. This too is a learned art, where interpreting inscriptions of caste entails understanding cues and signals of Dalits who operate subliminally in a seemingly casteless industry. In some cases there is anxiety about being found even on Facebook, but it's a calculated risk that Dalits in computing manage using tools like anonymity (Prakash and Priyam) or by curating their friends list or audiences separately. Thus any steps to address caste in computing must be mindful of the need for Dalits to have caste-ambiguity as it allows them to navigate the worlds of computing on their own terms. Efforts to build community for lower-caste engineers should similarly let them anonymously find community within their institutions.

Fifth, conversations about caste are emotionally charged and difficult for lower-caste employees due to the many reasons listed above. In scenarios where lower-caste issues are raised or assumptions of upper castes/castelessness challenged, there can be possible backlash or an upper-caste response to co-opt the issue and cement their position. In the case of Prakash, he was put in an awkward position as his interruption led to his coworker claiming to be a victim of the caste system himself, thus co-opting the anti-caste approach to justify his anti-Dalit sentiment. Caste is a system of graded hierarchy [6] but the relationships between different sub-castes or jatis are not necessarily neatly organized within the hierarchy as caste groups have their own discrete sense of identities [56] which are formed contextually. Who or which are the dominant caste in a particular space [121] shapes the nature of inter-caste relationships. Several land-owning and dominant OBCs have been discriminating against SCs and STs; similarly, higher-jati SCs have been discriminating against lower-jati SCs. It is important to know that locating relations of caste are not straightforward, where one can simply map relative privilege to ritual hierarchy. Any effort to address caste discrimination in the worlds of computing must incorporate an intersectional understanding of caste that takes into account its gendered and contextually formed graded nature of hierarchy.

Lastly, framing caste as an issue that disadvantages lower castes or Dalits places the burden of expressing their frustrations and narrating difficult experiences of casteism on them. Instead, framing the issues of caste in computing as an issue of universalized casteless privilege that benefit upper castes in the worlds of computing helps shift the responsibility of change and transformation onto how upper castes make sense of their own caste specificities and positionality, and how it is normalized and insitutionalized in the worlds of computing. A lot of the stories shared here have emerged from painful experiences of being looked down upon and coming up with strategies to protect themselves in an industry dominated by Brahminic sensibilities. We hope that these experiences build a conversation about caste among the 'casteless' upper castes in the worlds of computing and HCI to change the dynamics of this debate.

6 CONCLUSION

This paper unpacked the myth of castelessness in computing by focusing on the experiences of Dalit computer engineers. We built a case for studying and understanding the historical context and contemporary, modern formations of caste within computing by looking closely at literature on caste and castelessness in India as well as critical studies of marginalization in HCI and computing. This is an early attempt at characterizing the nature of caste in worlds of computing. It is limited by its scope as well as the fact that our participants were from Hindu and Buddhist backgrounds. We hope that future studies would look at experiences of Dalits in Islam, Sikhism, Christianity and other religions in computing, in addition to building a more nuanced understanding of how caste operates at the 'jati'/sub-caste level in worlds of computing, especially among upper castes. Our future work will look more closely at the relationship of gender and caste: to further nuance our understanding of caste experiences and how upper-caste casteless subjectivity refracts with gender in computing. We hope that our work also encourages more studies of caste in computing with a focus on understanding how caste operates among upper castes and how that shapes computing cultures. Additionally, this study demonstrates a fertile ground of study for HCI researchers to pay attention to caste as it is encoded and constructed in design of systems and technologies, specifically under the guise of "casteless design." Stories and perspectives of those marginalized by caste in India and South Asia can help bring a caste-critical lens of studying socio-technical systems and how it normalizes stories about caste as something else, for example, nation, community, region, gender, progress, modernity, race, etc.

We have traced how Dalits learn to 'read' caste inscriptions that are underwritten in the idea of castelessness of computing, and how they navigate these spaces as marked engineers with artful performances of interrupting merit, ambiguating caste and finding caste community. Our work found an important relationship between the utopic ideal of Ambedkar where he proposed an annihilation of caste and the proliferation of caste agencies we see in our study. We find that Dalits in computing are already challenging caste norms and a stable understanding of caste through an artful and playful performative engagement with caste legibility. This does not undermine how they are minoritized within an upper-caste dominated industry, but it makes the story of caste (or for that matter, race, gender, disability, etc.) more nuanced and perhaps more hopeful. Stories of castelessness and meritocracy continue to be a problem for the computing industry's attempt to address inequality; but even within the disparate nature of marking that follows from it, Dalits continue to find room to play with and challenge the very categories of caste that have been a historical burden for them. Our study underscores that Dalit professional subjectivity is formed in-situ in the worlds of computing through different caste encounters. Through this study, we propose that historical discrimination in the world of HCI and computing can be approached in a way that allows for more dynamic and relational interpretations of social encounters and contexts by recognizing the artful performances of those at the margins as they navigate and challenge structural inequality.

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