Reflexivity in Digital Anthropology

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ABSTRACT
There are a variety of forms of ethnography inside and outside HCI each with valid complementary contributions. This paper looks at the practices of digital anthropology and how it contributes to reflexive design in HCI. The paper overviews key aspects its use in HCI, as well as in the anthropological approach. In doing so it relates these practices to participatory design and the socio-technical gap, and the ways ethnography can address them.

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INTRODUCTION
Across the CHI community we are joined by a desire to understand humans’ interactions with computational technologies. Social science within CHI has many different approaches, all of which have different orientations to the discovery of knowledge. This paper’s purpose is to establish and characterize the contributions of anthropological ethnography. In part this will be done by differentiating it from other scholarly traditions. To be clear, however, the aim is not to criticize these, but to offer an alternative tradition.

Ethnography is used differently within different disciplinary traditions. Sociologists, anthropologists, not to mention ethnologists, ethnobotonists, and musicologists, amongst others, all use ethnography. There is no one form of ethnographic analysis: ethnoscience, ethnmethodology, grounded theory, conversation analysis, and cultural critique all are accepted forms [40]. Ethnography has been discussed before in the HCI community [2,4,10,15,16,19,32,36,37], but here I wish to discuss anthropological ethnography specifically, in order to explore its contributions and explain the differences between forms of ethnography, providing a basic grounding for the majority of the CHI community who are non-practitioners of ethnography.

While this paper aims to explain the differences among forms of ethnography, it does so without privileging one ethnographic method over the other. Clearly, there are many competing uses of ethnography, and we cannot hope to reconcile such widely divergent practices in one interpretation. Instead in HCI we need to recognize the academic legacies of these varied approaches and not privilege one approach over the next; we can adapt a series of complementary practices for HCI. Speaking as an anthropologist, I wish to contribute a deeper understanding of anthropologic practices as applied to reflexive ethnography of technology, an area increasingly being called Digital Anthropology [30].

In this paper I will establish what anthropologists can contribute to HCI by writing reflexive ethnographies. The people doing this in the digital space are called digital anthropologists, and; they write digital ethnographies. I will explain these terms in more depth in the next section. Next, I will establish that a critical contribution of digital anthropologists’ approach is reflexivity, and contrast it with other more positivist approaches in CHI. Finally, I will explain the key forms of anthropology’s ethnographic narratives, the key elements of its practice, and what HCI can take away from this specific instantiation of ethnographic practice when applied to the digital.

The purpose in doing this is twofold. First, the HCI community needs to differentiate the forms and variations of ethnography that may be relevant for the field, and I wish specifically to legitimize anthropologically ethnographic writing conventions in CHI. Second, this will allow me to discuss the key attributes of digital anthropology and how they may benefit CHI. Let us begin with a review of the role of ethnography both inside and outside of CHI.

WHAT IS DIGITAL ANTHROPOLOGY?
Anderson [2] and Dourish [16] have given largely similar accounts of the history of ethnography beginning with Malinowski, moving on to the Chicago school and encountered by HCI via Suchman’s “situated action”, which brings us to HCI. Of course, since 1987, when Suchman published her groundbreaking book, anthropology has continued to develop, but HCI has been slow to keep pace with these changes [43]. New theoretical arguments exist beyond Clifford, Fischer, Marcus or Geertz [11,13,20,28]. As new technologies develop they allow new possibilities for fieldwork—remote interviews, participant-observation through games, or blogs, or virtual worlds, and following the lives of ones informants via
Anthropologists debate how to bound this new area of study. They ask whether digital anthropology is simply the anthropological study of digital worlds [6], the integration between online and offline worlds [30] or perhaps the best definition would be the comparative ethnography of the consequences of digital technologies for the human experience. Presently, work in CHI spans each of these domains, but lacks anthropology’s tradition of reflexivity. Digital Anthropology is a burgeoning field [6,23,24,26,30,31], which is adapting to accommodate these new areas of study, and these technologies are increasingly becoming a focus of study themselves. As Geertz wrote, however,

The locus of study is not the object of study. Anthropologists don’t study villages (tribes, towns, neighborhoods…) they study in villages [21, p22].

In the Geertzian sense, technology is not the object of study. Digital anthropologists are studying in technology, or in the context of technology. Of course, digital anthropology like the rest of anthropology cannot be defined solely by its methods. Its reflexive stance, comparative analysis and use of critical theory are vital to its composition as a field.

Digital Anthropology then is a practice which exists in its own right outside of HCI. Scholars in HCI come from different traditions and those with anthropological backgrounds draw heavily from these works. Dourish’s “Implications for Design” brought the mid-80s debate of ethnographic cultural critique to HCI. However, I will argue we also need to situate HCI in terms of the larger debates within the burgeoning field of digital anthropology [30], and that CHI needs Digital Anthropologists writing reflexive ethnographies. I will return to this at the end of the paper, having described general anthropological practice in detail.

REFLEXIVITY

Burawoy defines reflexivity based on its methodological differences from positivist approaches, which culminate in orientations to the production of scientific knowledge [9]. Most methods in the CHI community belong to the positivist tradition—data is collected, studied and tested with the aim of producing an unambiguous result. They draw on positivist traditions as defined by Burawoy, in that they aim to minimize reactivity (the effect of the experimenter), and ensure reliability, replicability and representativeness (that our sample is typical of the larger population) and thus generalizable) [9]. Our approaches in CHI primarily fit Burawoy’s characterization of positivist methods; we seek to generalize our findings to other contexts and choose representative samples even for our ethnographies. We use fieldwork primarily for understanding how existing technologies are used, and generalize our findings to future ones, as means of “scenic fieldwork” for understanding the design context [10], or as a mechanism for identifying implications for design [16].

Within HCI, Bödker has called for reflexivity, [5] arguing that it is critical to third-wave HCI. She rest her argument on conventional understandings of reflexivity, whereas here I wish to explicitly define reflexivity as outlined by Burawoy [9]. His definition rests on four criteria. First, reflexivity, unlike positivism, embraces intervention as a data gathering opportunity. Second, reflective texts aim to understand how data gathering impacts the quality of the data itself. This approach “commands the observer to unpack those situational experiences by moving with the participants through their time and space” [9, p14]. Third, reflexive practitioners attempt to find structural patterns in what they have observed, and fourth, in doing so they extend theory [9]. Broadly they embrace and discuss the idiosyncrasies of unique ethnographic encounters. There are various approaches to reflexivity in CHI, but in this paper I will focus on the approach used by digital anthropologists and its potential contribution.

Within HCI ethnography draws on reflexive traditions both when it functions as a means of defamiliarisation by allowing researchers to obtain critical distance from their own culture [4], and later when used as a part of a design encounter [36]. Previously, Dourish discussed ethnographic work’s potential to explore the socio-technical gap [16]. Ackerman defines this as “the divide between what we know we must support socially and what we can support technically”[1]. Metaphorically, design is a bridge that spans this gulf [1,16]. Dourish extends this to argue that the gap is “essentially, between our technological 'reach' in the design process and the realities of technologies-in-practice,” and that it is in this space where users make meaning [16]. Ethnography has various orientations towards this gap. In this paper, I will show how its various forms differ in reflexivity and approach to understanding this gap.

In the remainder of the paper, I illustrate how Anthropological Ethnographic’s reflexivity contributes to design and theory in HCI. First, I describe three forms of anthropological writing. Second, I explain key elements of its technique. Finally, I discuss where ethnography is used in the design process in CHI so that I can highlight how Digital (Anthropological) Ethnography can contribute.

STYLES OF ETHNOGRAPHIC WRITING

Within the HCI community there is a prominent discussion of ethnography [16,32], but it is an umbrella term covering a range of approaches used at different parts of the design process to allow different types of reflexivity on the relationship between the social world. Discussing ethnography in HCI is tricky, because often ethnographic HCI research describes itself otherwise1. For instance, consider Wyche’s “field study,” in which she “visited”

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1 Here I will discuss only work which explicitly discusses itself as ethnography. This is to differentiate it from the more general use of the term ethnographic that is often used purely to mean a qualitative study. Further, discount ethnographic methods such as rapid ethnography are outside the scope of this paper.
megachurches for six months and “participated in services and carefully observed how technology was being used” [45]. Wyche never calls her work ethnography; though by many conventional definitions it is, given the participant-observation entailed in the author’s attending religious services combined with months of interviews.

Ethnography can have a variety of styles that afford varying amounts of reflexivity. In his “Tales of the Field; on writing ethnography” Van Maanen discusses the three major stylistic traditions of ethnographic writing in anthropology and to a lesser extent sociology—realist, confessional and impressionistic [40]. While only the realist approaches can be found commonly within the current canon of ethnographic text within HCI, confessional and impressionistic open the possibilities of alternate ethnographic voices that permit reflexivity.

**Realist**

The realist ethnography is without question the dominant form of ethnographic text within HCI (see [14,33,38]). Van Maanen describes the realist tradition of ethnography, though his use of the term realist should not be confused with Bhaskar’s realist philosophy of science [7]. Van Maanen writes,

On display are the comings and goings of the culture, theoretical coverage of certain features of the culture, and usually a hesitant account of why the work was undertaken in the first place. The result is an author-proclaimed description and something of an explanation for certain specific, bounded, observed (or nearly observed) cultural practices. Of all the ethnographic forms discussed in this book, realist tales push most firmly for the authenticity of the cultural representations conveyed by the text. [40, p45].

The realist account strives for the authenticity of representation, a key characteristic of positivism. He distinguishes it from the likes of journalism, fictions, and travel narratives in four ways—the characteristic for experimental author(ity), its typical forms, the native’s point of view, and interpretive omnipotence.

First, in discussing experimental author(ity), van Maanen is emphasizing the role of the author writing about the “good-faith assumption” of realist tales:

At root this assumption of good faith permits readers to hold the attitude that whatever the fieldworker saw and heard during a stay in the studied culture is more-or-less what any similarly well-placed and well-trained participant-observer would see and hear. Ironically, by taking the “I” (the observer) out of the ethnographic, report, the narrator’s authority is apparently enhanced and audience worries of personal subjectivity becomes moot. [40, p46].

The ethnographer, through prolonged exposure in the field gains authority: seeing repeated behavior over the course of months (or years) allows the ethnographer not to make inferences, but rather to repeatedly create and test hypothesis in context. Thus the author’s role is critical in understanding how theories are developed and evaluated. The writing style aims to minimize the impression of reactivity.

Second, there is the issue of typical forms of the realist text. The format emphasizes data and precision, as “details suggest intimacy and establish presence (who else could know such things?)” [40, p49]. The realist tale is “a documentary style focused on minute, sometimes precious, but thoroughly mundane details of everyday life among the people studied,” which are carefully structured to support authors’ points. Details give the impression of reliability.

Third, the realist ethnographer attempts to clearly represent the native’s point of view. As Geertz argued, it is not adequate to paraphrase the informants’ activities, but one needs a richer understanding of what lies behind their observable behavior. Consequently, van Maanen writes,

Extensive, closely edited quotations characterize realist tales, conveying to readers that the views put forward are not those of the fieldworker but are rather authentic and representative remarks transcribed straight from the horse’s mouth. [40, p49].

Ethnographies written in the Boasian tradition, ethnoscience and, most familiar to HCI, ethnometodology, all provide alternate analytical approaches to ensure accurate representations of the informants' voice. However,

In a sense the debate concerning the native’s point of view now turns on how such a perspective is to be rendered in a text rather than whether or not it belongs in one. Observation in this sense has given way to interpretation. [40, p51].

This raises a possible critique of realist ethnographies, that even in attempting to represent the informant’s point of view, interpretation inevitably comes into play.

The final component of Van Maanen’s characterization of realist ethnographies is that of interpretive omnipotence. The author of the realist ethnography is the final arbiter of the culture’s representation, having final control over the written text. Texts do not focus on “self-reflection and doubt” but rather convey a certainty over a correct interpretation of behavior thereby guaranteeing reproducibility. The realist ethnography does not provide the informant a way of participating in the dialog, nor does it allow the author to present findings in shades of gray. I argue these are potential liabilities with regards to design, and that often greater reflexivity is required. Other forms of ethnographic text, however, allow greater reflexivity than realist text.

**Confessional**

An alternate, more reflexive approach is that of the confessional ethnography which broadly provides a written form for the ethnographer to engage with the nagging doubts surrounding the study and discuss them textually. It emerged from the auto-critique within Anthropology led by Marcus and Clifford and was mainly influential within US based anthropology [28]. The aim is to demystify the fieldwork process. Van Maanen writes, “The distinguishing characteristics of confessional tales are their highly personalized styles and their self absorbed mandates.” The “I” that eludes the realist tale regains its voice, as the ethnographer discusses their specific relationships with their informants. As a consequence,

Stories of infiltration, fables of fieldwork rapport, minime melodramas of hardships endured (and overcome), and accounts of what the fieldworker did to the fieldworker are prominent features of confessional. [40, p73]
Here authority is personalized, and naturalness is emphasized. Despite the confessional tales’ free discussion of the limitations of the fieldwork, and the complexities of the relationships involved, the overarching belief is that on the whole the fieldworker has not “misled.” Instead, the “implied story line of many a confessional tale is that of a fieldworker and a culture finding one another and, despite some initial spats and misunderstandings, making a match” [40, p79]. The confessional ethnography provides a means of directly addressing the inherent subjectivity of ethnographic practice, by giving the ethnographer a voice and by refusing to black-box ethnographic practice.

This form is rare in HCI, however, we see a brief glimpse in a passage by Genevieve Bell [3] where she calls on Ruth Frankenberg [18] and demonstrates a need for reflexivity. Here she discusses her religious background and how it relates to her informants for her study of religion and SMS:

I grew up straddling multiple domains of religious signification in Australia – Catholicism and Catholic schooling; indigenous religious practices; a strongly agnostic home life... I am, as an Indian woman with whom I once worked described me, “a free thinker”. As such, I find myself more interested in the study of religious practice than I am in endorsing a particular vein of religious dogma. [3].

We do not need to know Bell’s religious proclivities, but in confessing them so carefully we gain insight into how she positions herself amongst her informants. I would argue it strengthens her work, by allowing us greater understanding into her ethnographic praxis.

Unfortunately, confessional ethnography’s tendency towards reflexivity has had difficulty finding a place in HCI as ethnographers already defensive about claims of the subjectivity of their method use primarily realist techniques to avoid opening their work to further scrutiny. This makes sense when careers and tenure cases can be made or broken by reviews from individuals from different scholarly traditions. Yet, this decision comes at a cost to science. We lose the ability to discuss and learn from what Dourish calls the “messy bits” of ethnographic practice, which he argues happen in exploring the socio-technical gap. Realist ethnography inhibits a chance to explore the nature of the relationship with the informant textually. This hampers exploration in publishing preliminary design work or in explaining design process, much the same way it was argued that focusing excessively on usability can prematurely cut off exploration [22]. Writing confessional text is one way a reflexive ethnographer explores the gap, and confessional ethnography’s reflexivity is vital to understanding the socio-technical gap and thus design.

Impressionistic

A third approach that shows promise for HCI is Van Maanen’s impressionistic ethnography, also has reflexive roots. Van Maanen draws on the work of impressionist painters and how they capture a moment in time from a uniquely individual perspective. Van Mannen draws on Clifford’s discussion of ethnography as poetry:

To recognize the poetic dimension of ethnography does not require one gives up its facts and accurate accounting for the supposed freplay of poetry. Poetry is not limited to romantic, or modernist subjectivism; it can be historical, precise, objective [12].

In this way impressionist tales are an art form of a sort,

The impressionists of ethnography are also out to startle their audience. But striking stories, not luminous paintings are their stock-in-trade. Their materials are words, metaphors, phrasings, imagery, and most importantly the expansive recall of the field experience.

The narrative of the impressionist tale is dramatic recall. There is little interpretation in letting the power of a well-told story stand for itself. This form of ethnography is rare in HCI, but, the following examples may clarify the form.

Impressionist ethnographic traditions are what are being drawn on in the HCI literature when studies report proactive findings letting the narrative speak for itself. For instance, March and Fleuriot [27] rely on impressionistic text when they discuss how teenage girls organize domestic space in terms of the privacy it affords cell phone conversations.

Bedroom, car, street, sauna, bathroom, closet, garden, trampoline, the room most distant from their mother... were all listed as places to go to with a phone in order to have a private conversation. So, rather than text silently, they wanted to use voice, and moved so as not to be overheard: “if there’s something I really don’t want my parents to hear I’d go in my closet.” [27, p109-110].

The detail of young girl on the trampoline or hiding in her closet engaged in clandestine phone call outside a watchful mother’s eye speaks to the impressionist conventions.

Similarly, Williams et al.’s study of Thai transnationals employed similar techniques in describing fieldwork,

I interview Nok and Kung at their home in Chantaburi province... His brother lives close by, and there are plans for other siblings to build homes nearby in the future...Both have cell phones, on extended loan from a cousin, but the house currently lacks hot water, a land-line, and internet. When they settle there permanently (“someday”) they will set those things up. For the time being, Nok checks email at her brother-in-law’s house or at an internet café in town. Their orchard will soon produce an excess of bananas to share with relatives or sell at the local market. Over the course of a day, Kung’s older brother visits to help in the garden, and we in turn use his house in town as our base of operations while visiting the afternoon market. His wife provides us with a spicy crab dip. We also run into Kung’s younger brother at the morning market; later that afternoon he and his wife stop by with green mangoes... They normally spend most of their time in Thailand in Chantaburi, but on this trip Kung’s sister is in the hospital in Bangkok and they are helping to take care of her. [42, p5-6]

This excerpt from William’s fieldnotes, creates an evocative image of the rhythms of her daily life with her informants. The text startled a Western audience discussing how her informants are choosing to do without supposedly basic utilities, and yet contrasts it with an easy access to cell phones. Borrowing cell phones, computer access, banana orchards, crab dip, and green mangoes—these are the images of a pattern of daily life organized around sharing and extended families. William’s presence is unmistakable in this passage. We imagine her traveling from Chantaburi to Bangkok with her informants, eating

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1. This self-reports as a “qualitative study” though the combined use of interviews with the participant-observation of blogs suggests that it was an early form of reflexive ethnography in HCI.
crab dip along the way. The texture of this passage grounds their argument that the cell phone fits into the rhythms of the daily life in Thailand.

Ironically, though, this bit of impressionistic text is set apart from the main body of the text, being used to set the mood before progressing to a more typical realist-styled ethnographic narrative. It is like a jeweled ornament set-amongst a functional band, and yet it pushes well beyond the boundaries of what Button called “scenic fieldwork” in that its purpose is beyond scene setting [10]. Williams et al. use this text to motivate their theoretical argument. Thus, impressionist text drawing from months of fieldwork can strengthen theories by grounding it in detailed examples.

These three styles of ethnography—realistic, confessional, impressionist—each have found at least some followers within the CHI community, even though confessional and impressionist writers struggle to get such work published. While most CHI ethnography is firmly rooted in the realist tradition, anthropology draws on all three forms of ethnography. Each convention offers alternatives about how to deal with issues of the author’s voice, the native’s voice, subjectivity, detail, doubt, and the authority of the ethnographic text. Certainly, each form raises a host of issues to be addressed. By outlining these ethnographic forms my goal is to encourage authors to reflect on the appropriateness of the form used, and reviewers to gain awareness of the alternatives.

While these forms each have sparked considerable debate within HCI and while confessional and impressionist tales may be particularly controversial they do not necessarily lack rigor. Anthropology traditionally requires a year in the field living with informants before one starts writing up findings. Only by repeatedly and routinely observing and interacting, again and again to the point at which it becomes utterly mundane does the anthropologist draw conclusions. Further, anthropologists observe strict conventions regarding participant-observation, rapport and the role of theory, which I will return to next. For now though, I want to stress that confessional and impressionist tales are no less rigorous than other methods in HCI, rather they differ in terms of their reflexive writing style and the voice given to the author. Such a voice is indeed entirely appropriate when one wants understand the relationship between the ethnographer and informants in a fashion that might inspire participatory design.

ETHNOGRAPHIC CONVENTIONS
When we think of ethnographic convention we think of thick description, something all CHI ethnographers struggle with given CHI’s short article length. However, there are other aspects of anthropological ethnography that are not commonplace in HCI—discussing rapport, participant-observation, and use of theory.

Discussing Rapport
One aspect of an ethnography which cuts across these three styles of ethnographic writing is the discussion of rapport, though realist writers often do so to a much lesser extent since there is a tension between discussing rapport and maintaining interpretive omnipotence. When an anthropologist speaks of “creating rapport” with their informants they speak of their actions to ensure mutual understanding and trust which will in turn facilitate the ethnographic encounter. Rapport facilitates access, not only physically reaching participants, but also getting them to open up and share their stories, even if they are embarrassing or taboo. Part of this involves creating shared understanding, as well as positioning the ethnographer into the social hierarchies of the informant’s culture, details which are key for a reflexive text. Discussion of rapport is to ethnographies what discussion of choice of statistical techniques is to an experimental paper—it is a critical aspect of the reflexive ethnographer’s craft and a core part of their method. Yet it is rarely discussed in HCI research.

So, for instance, a rather blunt example can be found in Sophie Woodward’s study of how women use, organize and maintain their wardrobes [44]. She writes how the choice of her dress for the interviews is critical to establishing rapport with her informants, but “there were numerous occasions when I got it wrong” [44, p39].

On… [one] occasion, when I went to see Vivienne, a woman who rarely wore make-up and deemed excess concern with clothing to be superficial, I was experimenting with fake nails. My unprofessional attempt to glue plastic nails onto one of my real nails resulted in a lost-nail mid interview. Her withering look as I scrambled to find it told me just how badly I had anticipated this research encounter. [44, p39]

Here we cannot help but visualize Woodward’s amateur maneuver, and stern Vivienne’s disdain at Woodward’s flippant femininity. Yet Woodward, despite a gaffe that damaged rapport, gained insight into the informant’s views. This was the result of the natural interactions involved in ethnography and the discussion of that experience. The ethnographer does not always get it right, and social gaffes give insight into a culture’s organization.

Another example comes from Masayuki Hamabata in his study of Japanese business culture [29]. Hamabata did his fieldwork while a graduate student and struggled with rapport. He reflects on how his early attempts to relate to his participants as a social equal were problematic especially because he was a single man. He writes,

The boundary of sexuality appeared to me with great clarity. If I didn’t cross it, I would waste my remaining months in the field, feeling dizzy with shame, my informants either trying to arrange marriages for me or trying to avoid me. As a sexually available male, I was my own biggest fieldwork problem.

Eventually, he writes that he resolved this issue by presenting himself increasingly in the role of a student.

…I acted increasingly naive about worldly matters… My status as a student came to the forefront; the image of the gukusei-san (student) is one of immaturity, even more so than in the United States, and it is the image I cultivated. In Japan, patterns of behavior that separate boys from men are quite clear-cut, and I found myself adopting boyish language and tastes… The ploy might not have been entirely conscious, but it worked. By becoming a boy, I removed myself from the sexual market: no longer was I considered a threat. [29, p16]
In doing so he fit his relationship as an ethnographer into the larger cultural hierarchy resolving the question of his marriage. Masayuki Hamabata writes of Japan that it is “a world in which families are also businesses.” Being gakeusei-san gave him a privileged vantage point into certain aspects of family business at the cost of access to others. Regardless, by performing the role of student, he garnered a first-hand understanding of social roles and their implicit constraints, which in turn inform his ethnography.

While the confessional format of Masayuki Hamabata’s ethnographic work allowed for a lengthy discussion of sexuality and rapport based on his own role in the exchanges, the realist format dominant in CHI does not. Such discussions of rapport are not only crucial to understanding the nature of the ethnographic encounter and its methodology, but to understanding the data itself. The ethnographer is exploring a social setting in part by interacting with its social norms. By creating rapport ethnographers are, in a sense, testing their ability to interact with social norms and to avoid violating their taboos, and their success or failure gives us critical insights into social organization. Their discussion of creating rapport, even the cultural bumbling of getting it wrong, is critical to the ethnographic enterprise. Consequently, explicitly discussing rapport via confessional or impressionistic text is a vital part of reflexive ethnography.

Explaining the strength of rapport to the reader goes beyond the spoken word, to include the wink, the innuendo, the shared glance, the comportment of the body, and tone. All contribute to understanding what is said, all of this constitutes thick description. Their interpretation, of course, should be grounded in repeated interaction and observation, and not merely the experience of a single instant. Thick description allows for the deepening of context regarding rapport. And yet, often the non-verbal is pushed aside as too subjective for the supposed facticity of dialogue.

Here is an example that looks at a married woman and strategies for maintaining domestic technologies,

Kathy (HH7) described her strategy for sharing security work with her husband, saying that at work, she is “highly technical” where she is “like a drug.” She winks at me as she says it, and her inflection is proactive. There is a knowing glance that passes between us, and in that instant something is communicated which is unspoken. I come away with the sense that she flirts with her partner to get him to fix things, and that the interactions can be sexually charged. Fixing the technology is just part of the exchange...[34].

The argument is that technology skills are being exchanged alongside other domestic skills, and that for men providing technology support affords a sort of digital chivalry. It is unsurprising then that a wife might flirt with her husband as chivalry has a strongly gendered component, but this flirtation is not made explicit by the dialog. Thick description—the wink, the glance, saying “dangling a carrot” just right—left the sentiment clear in the mind of the author due to her years doing similar pieces of fieldwork, who in turn attempted to translate it into the stuff of ethnography. Not only is the product of ethnography interpretive and contextual, it is incomplete. There is a point where the facticity of the situation stops, and interpretation begins, and a point beyond that where the ethnographer explains the unknown. This is our craft.

Geertz address the issue of uncertainty arising from thick description as well. He writes,

> Cultural analysis is intrinsically incomplete. And, worse than that, the more deeply it goes the less complete it is...Anthropology, or at least interpretive anthropology, is a science whose progress is marked less by a perfection of the consensus than by a refinement of debate. What gets better is the precision with which we vex each other.” [21, p29]

Discussing rapport, the ethnographer’s relationship to the informant and how this trust was gained, is critical to reflexivity methods as outlined by Burawoy [9]. Anthropological ethnography does this more explicitly than other qualitative work in HCI discussing rapport directly, especially in confessional and impressionist forms. Rapport is largely black boxed within realist texts, and most qualitative work in HCI. However, anthropologists argue it is critical to understanding the data gathering encounter, a key tenant of reflexivity as outlined by Burawoy [9]. This is especially important as we move to non-Western design spaces. More positivistic researchers in our community might ask: why then is the ethnographer’s interpretation a valid one if it is inherently subjective, contextual, and incomplete? In order to discuss that, I will next discuss Participant-Observation.

**Participant-Observation**

Participant-observation is the fundamental difference between many forms of anthropological ethnography and other qualitative methods that permit reflexivity. Rosaldo describes it as “deep hanging out,” being part of the informant’s daily life [36]. Salvador et al argue it is core to ethnographic sense-making in cultural anthropology,

> the notion that you learn by doing and by watching, and by the interplay of those two roles. This means that most anthropologists (and those from other disciplines who use ethnographic methods) do field work. They spend time in and with the cultures and peoples they are studying, engaging with the people around them, participating in every-day life, and attempting to make sense of the patterns of that culture. [36, p1]

Clifford writes participation-observation is both about experience and interpretation, Dilthey’s wrote of this as he discussed the concept of Verstehen—that through first hand experience individuals come to understand the world around them [25]. Writing an ethnography is “minimally, a translation of experience into textual form” [11].

While a psychologist creates and tests theories, so too does an anthropologist. When in the field they must make a hundred little decisions to gain rapport—lest the participant not open up and they lose insight into private moments, such as couples flirting to get technology work done. While gaining rapport, and through a string of endlessly trivial interactions, such as whether to wear fake nails to an interview, the anthropologist learns through first hand experience the rules of interaction and acceptable behavior.
Hypotheses then are tested not through external validation, but rather through embodied experiences. Participant-observation is a key element of much anthropological practice, and ensures substantial reflexivity.

A key difference between anthropological ethnography and other approaches in CHI is the treatment of this relationship in the ethnographic encounter. Participant-observation is central to anthropological ethnography, though realist anthropologists do not discuss in a first-hand fashion. In HCI while we have elements of participant-observation, we tend to discuss people as the objects of study, rather than embodied experiences in the context of personal relationships.

An additional difference is that confessional and impressionist anthropological approaches explicitly rely on inference and experience of the author, a willingness to engage with the whole of thick description. Of course, these inferences are made only based on the understanding gained in the process of becoming a “cultural insider”. Cultural critique, application of theory, literary practice, while they are methods employed by some anthropologists, are tangential to the core of attempting to textualize what was experienced. At its core, interpretation is relating back the experience in terms that the audience can understand using available tools. We need to distinguish critiques of the particular tools themselves, from the methodology at its core.

If ethnography is inherently experiential, then losing the voice of the author in its writing limits our insight into the data and our ability to use it for design. Ethnography is after all about a relationship with informants, and relationships are two-way—there is no other without the self. This suggests that while ethnographic work is inherently subjective, contextual, and incomplete, it has the possibility of giving us insights into the gap where the work of addressing the socio-technical gap is done. Participant observation allows the ethnographer to understand this work first hand, and as such the treatment must be personal.

**Use of Theory**

The most fundamental attribute of truly reflexive text lies in the use of critical theory [9]. Reflexive text creates new theories to elaborate on existing ones [9]. Their work is intrinsically tied to critical theory, and most anthropologists, even those writing realist texts, engage theory directly. Dourish critiques qualitative work in CHI for its not engaging with theory, and by providing a number of vignettes he suggests,

"that the most useful strategy when engaging with ethnographic work is to “read for theory” as much as for empirical evidence, since these may, in the end, be where the truly significant implications lie" [15].

When working with theory, anthropologists do not aim to prove or disprove a specific theory, but go into the field with a background knowledge of many different current theories potentially relating to the subject of study. Some of these might be models of behavior, but others might be more ephemeral.

For instance, in my recent work on gender I went to the field having thoroughly read up on feminist theory [e.g.39]. When in the field I brought, served, and cleaned up after dinner to subvert the role of guest and became a temporary member of the household. During the study I realized that by doing so I was engaging with the household’s gender roles. I turned explicitly to the theory of technology as masculine culture, which argues technology primarily designed by men best reflects their power and interests and ostracizes women [41]. I combined my observations of gender work and interview data to create open, axial and selective codes to construct new theories surrounding gender, which led finally to a theory regarding the co-construction of gender and technical identity [34].

Confessional and impressionist texts, in particular, are critical to discussing theory when rapport and participant-observation play a role in theory’s construction. Dourish has already established the need for critical theory in CHI [16]. What is key here is the recognition that, before this can happen, community norms for styles of writing must allow the background to theory to be adequately presented and supported—allowing for reflexivity is crucial.

**FRAMING ETHNOGRAPHIC PRACTICE**

When ethnography is used in the HCI canon, there are three specific forms—formative, summative, and iterative.

**Formative Ethnographies**

Formative evaluation aims to understand current practice or current practice surrounding technologies with an eye towards improving or creating new technologies. In the case of ethnographic work this may be studying an existing technology with an eye towards the future. These are the classic design ethnographies most common to HCI. For instance, William et al.’s study of Thai retirees [42], or Crabtree et al.’s work on coordinate displays [14] are both examples of formative evaluation.

Recent debates in HCI [15, 16, 32] focus primarily on formative ethnographic work. These papers discuss research that differs in terms of the analytical methods used and the types of contributions made to HCI. Some of this work makes explicit design recommendations [33, 38], whereas others reflect on findings at a more theoretical level [14], others still do both [42]—yet, these approaches contribute an ethnography understanding to design.

**Summative Ethnographies**

Summative evaluation evaluates the technology at the end of the design process. Summative ethnographic evaluation explores the socio-technical gap. An example of a summative ethnographic study is Miller and Slater’s look at how the Internet is used amongst Trinidadians [31]. Broadly, they question the notion of ‘site’ in ethnography by arguing the world of the internet and everyday life are not separate places, but rather both act as spaces where identity and relationships are being negotiated and maintained. The
Internet simply allows for additional ways of “being Trini.” Miller and Slater are trying to create an understanding of how Trinidadians and the Internet change each other, but they are not trying to change either.

Unlike the formative studies that offer their findings to help close the socio-technical gap, summative studies aim to understand it for its own sake. Dourish writes:

Seeking to close the gap through the application of ethnographic methods is a contradiction in terms; the gap is where all the interesting stuff happens... It is practice that gives form and meaning to technology; the focus of ethnography is the ways in which practice brings technology into being. From this perspective, and drawing again on the notions of reflexivity raised earlier, we might suggest that what ethnography problematizes is not the setting of everyday practice, but the practice of design. [16].

One way of reading Dourish then is to draw into question the legitimacy of formative ethnographic practice. I think this is perhaps too strong—for formative design ethnographies are a valuable form of practice as they both seek to close the socio-technical gap and they represent a newer ethnographic form in the recent CHI literature. While I do not condemn them (and could not, as an author of such studies), I do think there is an important distinction that needs to occur when discussing ethnography in HCI, as formative and summative ethnographies differ in how they approach this gap, and thus differentiating them is critical.

Summative studies are increasingly being written in the burgeoning field of Digital Anthropology. This style of ethnography has both pros and cons. In itself summative work makes little direct contribution to HCI in terms of how to connect findings to design. Further, by removing any interpretive voice as to how to apply these findings from the text itself, this work loses the authority over how it may be applied to design. On the other hand, unlike the other forms, this approach does not require the ethnographer to manage two separate relationships with the informant—that of the peer required for participant-observation and that of critic for design. This suggests the primacy of the relationship with the participants is preserved, allowing data to be unaltered by the politics of design. Both of these are significant factors that must be considered and debated as we appropriate this style of ethnography in HCI.

Iteratively Evaluative Ethnographies
Here I am proposing a third form of ethnographic praxis, iteratively evaluative ethnographies, which address some of the issues above. While formative and summative practices can be reflexive, iterative evaluation is an inherently reflexive practice. It is different from participatory design practices [8], cultural probes and design-based research because of its roots in anthropological ethnographic practice. The Webkit project, in which tangible interfaces were created to teach rhetoric, provides an example of this approach [35]. The aim was to employ a participatory design technique, but the English National Curriculum, prohibited spending lesson time for design evaluation, and the children could not participate outside of school. To address this, the technology and the lessons themselves were designed so that even if the prototype broke down completely, or was not useful in the un-expected ways, the lessons would still succeed [35]. Technology was then only gradually and iteratively added to the interface, resulting in 11 prototypes over 18 months, many of which were then deployed in the classroom. An anthropological ethnographer with a background in critical theory [17] observed teachers interactions with students, and participated in the lesson as a teacher’s aid. Doing so provided an understanding of the work that was being conducted by children and teacher to compensate for the socio-technical gap. The resultant grounded theory improved the technology, narrowing the socio-technical gap, but also improved the lesson-plan and surrounding infrastructure, increasing users capability to use the bridge afforded by design.

This approach to ethnography draws on participatory design tradition as it includes children’s voices in design. However, it moves beyond standard participatory design by allowing informants to participate in the design process in an indirect fashion. While perhaps somewhat contrary to the spirit of traditional participatory design in that the users are not given a direct role in design, it does still give them a voice. At the same time it also allows them use actual technology, and as the technology evolves feedback is received on a variety of prototypes via an ethnographic encounter. This is different from technology probes in that the technology was meant to be a product in its own right, not simply a point of intervention. Consequently, it allows for feedback on how users bridged the socio-technical gap, and allows technologists the chance to understand and react to these behaviors through prototype redesign. However, this only works due to the exceedingly slow pace of design and the ethnographer’s engagement with informants—in the case of Webkit, the fieldwork and iterative design took place over a year and a half. Regardless, this approach is a significant means of both empowering users and understanding the socio-technical gap as part of the design process.

Ethnography within HCI, then, has a multitude of orientations and contributions to both design practice and understanding society. Further, each of the three forms—formative, summative, and iteratively evaluative—negotiates the socio-technical gap differently, by aiming to close it, understand it, or perhaps a little of both. These forms of ethnography offer exciting possibilities for how to explore the “messy bits” of the socio-technical gap, and relate it to design, if we embrace the challenge of integrating its writing forms into discussion of design process.

CONCLUSION
Understanding the real world appropriation of technology and how it is situated within social conventions and realities of daily life is a vital part of design. However, if the “messy bit,” the socio-technical gap, is where we need
to be focusing our attentions to understand technology use in actual practice [16], then we need research approaches that strive to understand it. The socio-technical gap can be studied objectively, and at a distance, however it can also be experienced as part of a reflexive ethnographic encounter. The reflexive ethnographer works in the shadows between what is said and what is done, piecing together their narrative having seen what is enacted in a multitude of lights. Innuendo, half-truths, the unsaid, that which cannot be specifically laid out with certitude— these are the guiding principles of daily life and the ethnographer works here. By discussing rapport, writing thick description, engaging in participant-observation, and presenting work as confessional or impressionist tales, the ethnographer can give insight into their encounter from first hand experience.

Yet a core problem then is one of the authority of writers [11]. Clifford points out that the feature of anthropological practice that allows its followers to achieve scholarly legitimacy is the custom of spending a year with informants, and that this is a professional rite of passage that gives anthropologists authority. Our field needs norms for what constitutes proper ethnography praxis that balance the realities of design with the need for authority.

Within HCI we need to recognize the various forms of ethnography. Anthropological ethnography allows the author to engage with theory directly, and focus on the experience of the relationship between the observer and the observed. This preserves context by embracing intervention as a data gathering opportunity through its reliance on rapport. Confessional and impressionist works allow readers to understand the process of data gathering and the ethnographer’s place within it. Finally, ethnographers use participant-observation to understand the underlying structure of the observed, and apply and extend critical theory to explain it [9], by broadly embracing and discussing the idiosyncrasies of unique encounters. Ethnographers struggle with the impact of the ethnographer’s power and how it impacts data, yet realist, impressionist and confessional texts all make significant contributions to science [9]. Each approach has liabilities.

Given that there are multiple valid approaches, each with liabilities, we need to be nuanced in our discussion of ethnography and focus on relating methods to design. Here I have shown how digital anthropology can contribute to participatory design as a means of understanding experience and how iterative ethnography allows for careful study of the socio-technical gap with a chance to fold the findings back into the design process. Finally, summative ethnography provides case studies of technology use focusing on how users dealt with the socio-technical gap.

We need to consider current unresolved debates in Anthropology, for instance. One such debate is raised by experimenting with the form of ethnographic text—the experimental, interpretive, dialogical and polyphonic (giving the informant’s control over authorship along with the fieldworker) [11]. Just as anthropologists are struggling over and debating the appropriate form of their ethnographic texts, we need not only to debate this but to also situate this dialog with regards to design. Much of this debate focuses on resolving the privileged status of the ethnographer over the informant in authoring ethnographic text. Given our participatory design heritage, our design-informants voice is relevant. We need to integrate this dialog into our own.

Conversely, we need to make sure the voice of the ethnographer’s first hand experience in the field is not lost as we record these experiences. Also, we need to add our own voice to this dialog as we discuss the relationship between digital anthropology and design. Confessional and impressionist text and critical theory represent a radical departure for CHI, but these are key forms of reflexivity. Participant observation allows us to explore technology use through embodied experience. Reflexive text, at its best, embraces and impacts the data gathering encounter, providing untapped sources for design inspiration. Through laying out the attributes of reflexivity and digital anthropology, I hope to ground a more nuanced onward discussion of how to use ethnography, and promote respect and understanding of its many forms.

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