What's in Your Wallet?
Implications for Global E-Wallet Design

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ABSTRACT

As part of a comparative ethnographic study of everyday life of young professionals in London, Los Angeles, and Tokyo, we conducted a detailed survey of wallets and their contents, through photographs, interviews, diary studies, and observation. Despite prominent differences in culture and lifestyle, there were remarkable similarities across all three sites in terms of what wallets contained and how they were used. Individuals arrived at similar (if imperfect) solutions to common problems of temptation management and access control, identity management and partitioning, and collecting tokens of affiliation and history. Our findings suggest that future electronic wallets (e-wallets), whether physical devices or distributed functionalities, will be able to capitalize on these existing patterns, solve some of the existing problems, and encounter new challenges. Furthermore, they frame the potential value of e-wallets in a broader context than traditional concerns over privacy, security, and efficiency.

Author Keywords

Ethnography, mobility, urban computing, ubiquitous computing, e-wallets, globalization, user-centered design

ACM Classification Keywords

H5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

INTRODUCTION

Cities can be viewed as complex collections of infra-structures to support diverse services, from transportation to recreation. Infrastructure access is controlled and provided through an equally broad range of interfaces, from personal interaction with an agent to mechanical transactions with vending machines. To live in a city is to continually interact with these various interfaces, often seamlessly and almost unconsciously, sometimes troublesomely not. These interfaces are often highly technological, and on trajectories of rapid change. An emerging challenge for HCI is to better understand these everyday, dynamic, but under-studied contexts of use, and to design better interfaces for urban life.

As a step in this direction, we conducted an exploratory ethnographic study of transactions in the daily life of young professionals in three disparate cities: London, Los Angeles, and Tokyo. Data analysis for the overall study is ongoing, but we present here some initial findings around a key artifact we examined cross-culturally: the wallet.

Wallets are practical containers of the cards, coins, and cash that allow their bearers to get transactional work done. As such, they have over the last decade often been referred to when analogous functionalities within the digital realm have been designed and discussed. These "electronic wallets" or "e-wallets" ("electronic purses" in Europe) have taken the form of software modules, portable devices, or smart cards. Utilitarian technical concerns of interoperability, efficiency, and security have dominated.

Wallets are also highly personal and symbolically-charged vessels at the junction of the personal and the public. They are items of fashion, collectors of biographical residue, combinations of the personally chosen and the institutionally mandated. They are of methodological interest to the social scientist, the artist, and the cultural critic. They shed light on, and implicated in, the construction and use of identity, affiliation, and trust.

This paper seeks to reinforce and extend past work in both these practical and symbolic areas. We begin by briefly surveying past work and outlining our methodology. We then present major themes that emerged from our fieldwork, around practices of temptation management and access control, identity management and partitioning, and collecting tokens of affiliation and history. We conclude with implications of these themes for the e-wallet concept.

PRIOR WORK

A large literature has emerged on mobile workers [e.g., 6,7], looking at what they carry and why. Our study seeks to extend this beyond the work domain per se, into everyday urban routines [see also 4, 10]. Our interests parallel those of Nippert-Eng, who has illuminated the spaces and transitions between home and work [2], and more recently has used wallets and the stories and contradictions they evoke as one basis for new research on disclosure and concealment [Christena Nippert-Eng and Jay Melican, personal communication].

Another substantial literature concerns the technical requirements of e-wallets, e-cash, smart cards, etc.

However, little of this research has focused on use of actual wallets and existing transactional practices from the consumer's perspective. Penz and colleagues [5] have applied social representation theory in a quantitative survey of 264 Austrian users' conceptions of cash vs. various non-cash payment methods. Issues of control and visibility emerged from their data, as well as from our very different data set.

Closest to our analysis is one by Cooper and colleagues [1], who used semi-structured interviews about the contents of 55 UK adults' wallets to inform the design of e-wallets as wearable technology. Our work expands considerably on their methodology, while being both narrower (in focusing on young professionals) and broader (international scope).

Our approach was inspired in part by the Portable Effects project of media researcher Rachael Strickland [9]. Like her, we see our participants as designers of their everyday nomadic practices, creatively balancing personal, cultural, and infrastructural constraints.

STUDY METHODS

Young professionals, aged 22 to 32, with an even split between genders, were recruited through existing local academic and professional contacts. Many were in the design and media industries; freelancers were relatively over-represented. As is common in ethnographic work, we selected the sample for theoretical interest and for trust relationships with the researchers rather than for statistical representativeness. We decided to focus on individuals transitioning into the workforce after completing their higher education, as we expected (and found) them to be both tech savvy and confronted with novel challenges as they adapted to a new life stage.

Study participation took place in four phases:

1. An initial interview, including a survey of their "mobile kit", i.e., everything they were carrying with them – in their car, pockets, bags, wallets, hands, etc.

2. One or two days of diary keeping, focused on use of any of the aforementioned items. Various methods were experimented with, including notebooks, voice recorders, and GPS-enabled camera phones.

3. A "shadowing" session in which a researcher accompanied them on a shopping, commuting, or other trip through the city.

4. A final interview, including a review of their diary.

A total of 28 individuals participated, 12 in London, 10 in Los Angeles, and 6 in Tokyo. These sites were selected as major world cities with differing cultural, physical, and technological infrastructures. Many of our participants were graduates of elite universities, notably: the Royal College of Art (London), University of Southern California (L.A.), and Keio University Shonan Fujisawa Campus (Tokyo).

Figure 1. A wallet of one of our Tokyo participants.

FINDINGS

One overall finding was that despite considerable individual variation and obvious cultural differences across the three cities, wallets were for the most part a remarkable invariant (Figure 1 shows a typical example). All of our participants carried at least one, either in a pocket or a bag. Wallet contents uniformly included cash, usually on the order of $100, replenished at cash machines (ATMs) multiple times each week. Thus ATM cards were also ubiquitous, and were accompanied by an assortment of non-cash payment cards, whether debit or credit. These forms of money formed the collective heart of the wallet, which (replicating [1]) was regarded as an essentially financial artifact. (Interestingly, as such, it was often not considered the most private of the items that one carried, that honor going instead to the mobile phone or the day planner notebook.)

In addition to money itself, wallets in all three cities contained associated credentials in the form of loyalty or reward cards. These ranged from an informal "grant the bearer 10% off" hand-written on a bar's business card, to credit card look-alikes that linked the user into private, generally poorly understood centralized databases of points, rewards, and purchasing habits. Often the most numerous type of loyalty card was the "buy N get one free" generalization of a business card designed to be stamped or punched to record transactions at the point of sale.

A universal plague on wallet use was the flood of receipts generated by transactions. These would periodically build up in wallets, sometimes impressively adding to their bulk, until emptied out into some filing system at home. Participants would apologize for them, and complain of the overhead of managing them (sometimes out of tax requirements), but sometimes one would bring to mind a pleasant interaction or forgotten episode in their recent life.

Somewhat analogous to these receipts were the many business cards that also inevitably built up in wallets until emptied into their own filing systems. These formed a historical residue of social or business transactions, sometimes valued enough to reside permanently in the wallet's limited card carrying capacity. They were often a source of professional pride, or urban prowess in knowing the best spot for a foot massage, for example, rather than

prompting apologies for the mess. (Having a standardized form, unlike receipts, they were intrinsically less messy.)

Closely related to the primary financial content of wallets were, for all of our participants, credentials for transportation – though sometimes, consistent with their secondary status, these were housed in a separate wallet, often issued by a transit authority. These were more elaborate for the transit-oriented cities of London and Tokyo, which produced complexes of commuter passes, travel cards, and ordinary tickets, often with associated receipt-like clutter. L.A., by comparison, demanded of its driver-citizens merely a license and proof of insurance. Perhaps not surprisingly, transportation credentials were most clearly on the cutting-edge of technological innovation, with most of our London and Tokyo participants using radio-frequency identification (RFID) stored-value farecards (Transport for London's Oyster® Card [3] and JR East's Suica® [8], respectively). Los Angelenos had nothing in their wallets of comparable technical complexity, nor of almost magical "Open, Sesame!" power.

In addition to commonality of contents, wallet users were also uniformly engaged across all three sites studied with a set of shared concerns, which we will now address in turn.

Temptation Management and Access Control
Wallets provide a wide range of options to their users for what kinds of transactions they can engage in. For some transactions, only one mechanism is feasible, either technologically or socially. For example, L.A. parking meters demand coins, and group outings in Tokyo demand cash (unless one has social standing to charge the group's tab and then request individual reimbursement). Multiple conflicting external constraints of this type account for some of the length of wallet contents, as many different items must be carried "just in case." For many other transactions, however, multiple mechanisms are possible, either for a single vendor (accepting cash, credit, and debit cards) or across vendors. This places a burden of choice on the wallet user, either of vendor (place of transaction), or payment method in a given place.

These choices, though adding complexity, are often actually highly valued. Particular places may be chosen and valued for the kinds of transactions they enforce or encourage, whether cash-only street markets that are seen to discourage excessive impulse buying, or transit systems that read credentials at a distance and so don't require taking out one's wallet. Credit cards may be valued for emergency use and indicating a kind of social status, but nevertheless kept in a separate wallet in one's bag, not on one's person, to discourage use. Debit cards are similarly valued for restraining impulse spending, as the direct link to one's bank account are known and direct. For many in the just-starting-working life stage of our participants, cash flow is a perpetual problem, and complex practices developed around wallets in managing the conflicting forces of being prepared, having purchasing power, needing access to various infrastructures, and guarding against one's own bad habits.

Identity Management and Partitioning
Wallets are quite literally about compartmentalization. Each slot or compartment usually had an explicit function, each card a specific meaning or category of use. Although as Nippert-Eng [2] had found our participants varied in how much they sought to integrate or keep separate their work and personal lives, the overall trend was towards separateness, or at least separability. For example, freelancers lived under the constant threat of sudden severance from their current employers, and so kept personal/professional data (primarily their contact lists) separate from (or copied from) the work materials their employer provided and controlled.

The desire for separate but accessible partitions also played out at the device or physical container level. Separate cases for business cards, travel documents, and backup items (like seldom used credit and loyalty cards) were not uncommon. As vernacular designers in Strickland's sense [9], our participants were faced with continually trading off a desire to reduce the number and mass of things carried with a both desire to maximize the homogeneity, simplicity, and meaningfulness of each thing carried, and a desire for having the right tools for the right situation. Sometimes this resulted in large bags of multiple wallets and devices being carried about; other times, these forces were resolved into large numbers of items being left home, items carried carefully selected for the particular outing.

Collecting Affiliations and History
Clutter management is the bane of the wallet user, yet it apparently takes very little on a clutter-producer's part for clutter to find its way into the wallet. Accumulating traces from one's interaction with the city, for ostensibly possible (though often quite unlikely) future contact with these people, places, and services, was a widespread preoccupation. In parallel with this valued and often fun collecting activity was the drudgery of receipt tracking, particularly when mandated for tax or reimbursement purposes.

A number of forces and enablers appear to underlie these phenomena. One was the wallet form factor itself, designed to fit cards of a certain standardized size and shape (defined as ID-1 by ISO standard 7810), and to be used such that there was always some spare capacity. (If not, bags or pockets – wallet extensions, as it were – could be used.) If one is handed a card, chances are one has the means to carry it. Another is the promise of future interaction, and the unpredictability of its value by the wallet user: better to err on the side of keeping everything, since one contact might have a big future payoff, socially or financially. And finally we posit a widespread interest in collecting and personal history as an end in itself, even if only at an

aspirational, fairly superficial level. If receipts were as standardized yet graphically interesting as business cards, they might be collected with gusto as well.

IMPLICATIONS

Our overall finding of commonality in wallet practices across London, L.A., and Tokyo, at least in the studied cohort of young professionals, gives some credence to a possibility of a "e-wallet" (or, more likely, set of hardware and software e-wallet functionalities) that scales very widely. We call this notion a "global e-wallet," though recognizing that like many other things "global," it is likely in practice to apply only to a global elite, with ready access to the financial, physical, and social infrastructures that underlay the daily lives of our participants.

Our findings suggest that e-wallet design could profitably address the same ongoing issues and trade-offs faced by physical wallet users. We don't anticipate these tradeoffs going away as wallets become increasingly digital, but the equilibrium points may shift.

In terms of temptation management and access control, e-wallets potentially cut both ways. They open the possibility of greater tracking and awareness of one's spending behavior, and lifestyle more generally – in effect, automatically blogging one's life in a way similar to the moblogging exercise conducted by our Tokyo participants. But they are likely to be deployed in the service of ease of access (spending), if not the marketing of temptation; for example, JR East is attempting to develop the Suica farecard into an e-cash system for use with the many merchants physically within and adjacent to their train stations.   And the delight of hands-free automated recognition by infrastructural gatekeepers should not be underestimated; for our participants, privacy issues around such schemes were a distant afterthought.

E-wallets would seem to have a more difficult time addressing issues of identity management and partitioning. Particularly if added onto an existing device with its own meanings and identity, such as the mobile phone, e-wallet functionality risks collapsing categories (communication and finance, in this case) that users continually work to keep distinct. Perhaps such collapses can be counteracted by the interface itself, if it promotes easy and salient categorization and separability.   And there is no end to potential e-wallet form factors. One possibility is to treat a collection of smart cards, already conforming to the slots in an existing physical wallet, as comprising a distributed e-wallet. In this case, the physical form factor emphasizes separateness, and a digital interface and overlay could provide connection and automated-organization.

Finally, our study suggests that e-wallets have a long-term potential for collecting and organizing receipts and mementos in a clutter-free (or at least less clutter-full) way, if those items could be made partially (through tagging) or fully digital.   Such a system could enable new kinds of "freebies," while also giving users more powerful and aesthetic ways to get on top of, and stay on top of, their collections of urban residues and recollections of urban life.

Much work on e-wallets has been on behalf of service providers seeking increased efficiency, security, and marketing power. These preliminary findings from a study of urban life across three continents suggest the usefulness of an additional perspective that considers the everyday design problems faced and resolutions achieved by urban residents. That there are some intriguing commonalities both of problems and solutions across very different places suggests that notions of what and where e-wallets could be are worth expanding, with the end-user in mind.

ACKNOWLEDGMENTS

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