"Human-Currency Interaction": Learning from Virtual Currency Use in China

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ABSTRACT
What happens when the domains of HCI design and money intersect? This paper presents analyses from an ethnographic study of virtual currency use in China to discuss implications for game design, and HCI design more broadly. We found that how virtual currency is perceived, obtained, and spent can critically shape gamers' behavior and experience. Virtual and real currencies can interact in complex ways that promote, extend, and/or interfere with the value and character of game worlds. Bringing money into HCI design heightens existing issues of realness, trust, and fairness, and thus presents new challenges and opportunities for user experience innovation.

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

Author Keywords
HCI design, ethnography, digital money, virtual currencies, online games, virtual worlds, trust, China.

INTRODUCTION

The field of HCI has long prioritized understanding the contexts within which technologies are adapted and appropriated by their users [3, 12]. Though acknowledging that these contexts often have critical economic aspects (e.g., the "digital divide"), relatively little work in HCI has focused on the significance of money itself as one aspect of user interface and user experience design. Where money has been considered as a UI/UX element, as in the design of e-commerce, e-cash, or payment systems, it has tended to be as yet another data type, albeit one to be specially protected, transmitted, and manipulated.

Money is more than just another kind of data, however. It is a social construct of complex psychological and cultural power [6, 7, 11]. Its use entails connection to wider contexts, not just to "the market", but also to contested structures of personal and public meaning, like social class and political economy.

Moreover, the role of money in online experience and culture is becoming more important with the growth of paradigms such as collaborative community sites and virtual worlds. For example, with banking services being mashed up with social networking (e.g., prosper.com), or virtual worlds being marketed as real economies (e.g., Second Life), what it means to incorporate money into HCI design takes on new and broader relevance.

This paper presents analyses from an exploratory ethnographic study of virtual currency (VC) use in China in the summer of 2007. We sought not only to better understand China's huge online population as an important market and domain of innovation, but to gain a useful, defamilarized vantage point from which to think more generally about the emerging relationships between human-currency interaction and human-computer interaction.

Our study reveals how the perception, acquisition, and use of VC can critically shape online gamers' behavior and experience. We found that players may abandon, embrace, or extend virtual worlds based on the ways game resources (such as game money and equipment) could or could not be bought and sold. The effects of money were not *sui generis* but influenced multiple key aspects of user experience, particularly those around realness, trust, and fairness. The design of VC and its affordances present new challenges and opportunities with wide-ranging potentials.

STUDY SCOPE AND METHODOLOGY

We chose to study virtual currency use in China for a number of interrelated reasons: the proliferation of online games, the surging population of online gamers, and the massive use of multiple online currencies, including one that has attracted considerable controversy: Q Coins.

Tencent, the provider of China's most popular IM service QQ (273.2 mil. total active accounts [13]), introduced Q Coins in 2002 to sell value-added services in its diverse portfolio of applications such as QQ, QQ Show (avatar-

CHI 2008, April 5–10, 2008, Florence, Italy.

based chat), QZone (multimedia blogging), and QQ Games (a large and varied collection). One Q Coin retails for 1 RMB (about 0.13 USD). Due to the huge volume of Q Coin transactions (one estimate is 200 mil. users [10]) outside direct government control, Chinese economists and later the central bank became concerned that the Q Coin economy may threaten the official RMB.

We conducted observation and semi-structured interviews in and around Chengdu, Beijing, and Shanghai, selected for their reputation as "game hub" cities, and for geographical diversity. Part of the study was also conducted purely online, in which we observed, participated, and interviewed informants via Tencent services.

Interviews took place in *wong ba* (Internet cafes), in public places such as cafes and restaurants, and, for a few, their workplaces and homes. Most informants were interviewed alone, though some were conducted with groups of two or more friends. We asked about online usage habits (e.g., frequency of Internet usage), game experiences (e.g., reasons for playing online games), VCs (e.g., whether buy or give VCs), and other topics arising in context.

We recruited informants to have had some experience with VCs, as defined in the next section. Experience was usually direct, though sometimes indirect, through their students or children. Most of our informants were acquired through "snowball" recruiting, e.g., while observing a technology market, we met a friendly shop owner selling game point cards, who later introduced us to some regular customers.

In total, 50 informants were interviewed. Their diverse backgrounds included: a factory worker, a group of 11-12 year-old school children, a teacher and a gamer in their 50's, young professionals with recent college degrees, a VP of design for a Chinese game company, and owners of software stores, news kiosks and Internet cafes. Through our informants we encountered a wide range of games and virtual worlds such as QQ Games, World of Warcraft (WoW), Legend of Miracle 2 (Mir 2), With Your Destiny (WYD), Fantasy Westward Journey, Miracle Island, Audition, Maplestory, Zheng Tu (ZT), and Second Life.

Most interviews were audio taped (with consent) and then transcribed. Materials were then analyzed in a "Grounded Theory" manner, i.e., summarized and categorized post-hoc and grouped into a list of about a dozen themes.

ONLINE AND VIRTUAL CURRENCIES

An *online currency* is any official or *de facto* unit of exchange used in an online transaction. This includes RMB or USD when used in an online transaction (typically via credit card), regardless of whether the good or service purchased is "real" or virtual.

Virtual currencies are a type of online currency: private currencies intended for online use. Though there have been attempts (e.g., Beenz [8]) for general purpose virtual currencies, most are specific to domains such as Q Coins for Tencent services, or particular games or virtual worlds such as gold within WoW. Table 1 presents some broad functional categories we created for VCs we encountered.

Type	Designed to	Examples
Gateway	Interface to public currency	Q Coin, WoW point card
Game-specific	Facilitate game play	WoW gold, Miracle 2 yuan bao
Player-specified	Not designed - emerged *de facto*	WYD dragon

Table 1. Categories of virtual currencies.

Gateway currencies serve to convert public currencies into virtual ones. Some are time-based, like WoW point cards (30 RMB buys 66 hours of game time in Mainland China); others can be used to buy virtual objects, services, or status (e.g., 4.8 Q Coins can buy a trendy handbag for your QQ Show avatar). They can be purchased for online, typically with a credit card or bank transfer, or with cash, typically in the form of a scratch card, or by calling or text messaging a dedicated number (cost will be billed to the calling phone).

Game-specific currencies have a different function: to facilitate game play in an appropriate and fun way. Depending on the game, they may be bought with gateway currency, or they may not be for sale, having to be "earned" in the game world itself. However, as the well-publicized phenomenon of "gold farming" [14] illustrates, even "not for sale" virtual currencies can be bought, through non-sanctioned Real Money Transactions (RMTs).

Player-specified currencies are a kind of game-specific currency, but not ones designed in advance by game designers. Instead, these arise by convention within the game itself, sometimes correcting unanticipated problems with the official game currency. For example, dragons within WYD are *de facto* units of measurement and even exchange for transactions in which the regular currency does not come in conveniently large enough denominations.

IMPACTS OF VIRTUAL CURRENCIES

Virtual currencies, like any non-standard currency, tend to be unfamiliar and problematic, raising a multitude of issues. While some of these were currency-specific (e.g., determining a price or exchange rate), often they were existing issues endemic to virtual worlds that the introduction of money further highlighted. We consider three such issues: realness, trust, and fairness.

Realness

Not surprisingly, virtual currencies raise questions about their connection to "real life". Gateway currencies in particular tend to beg this question in having one foot in the virtual world, one in the actual world. For example, Q Coins had obviously virtual aspects (e.g., only being valid

for virtual goods, not being transferable back into cash) but also obviously real aspects (such as being purchasable with cash, having a physical instantiation in the form of a scratch cards, and having an official 1:1 exchange rate with RMB).

This hybrid nature of Q Coins was apparent to the primary school students with whom we held a focus group. Adult informants tended to dismiss virtual currencies, and even gateway Q Coins, as not real, not serious, objecting to their restricted usability only at certain (Tencent) websites.

A number of informants, mostly young professionals who had spent considerable time and money in games, insisted that even game-specific money was real. One informant thought that Q Coins could make a perfectly fine real-world gift, provided the recipient had something like a virtual pet on whose care he or she could spend them. (This same informant also liked to give virtual pets themselves to his co-workers as gifts.) Another became quite indignant:

> "They [game money and real money] are not that different…it [game money] is just under a different name and it attempts to make people feel that they are not spending real money, but indeed they are… the Internet is a big 'gold hole', I spent more money online [primarily on games] than in reality."

From this view, virtual currencies are dishonest, almost scams: real money masquerading as an innocuous, too-easy-to-spend plaything. Future HCI design, we think, will increasingly need to deal with the issue of virtual vs. real, and not just in the virtual world context. Efforts to suspend disbelief in the name of playfulness or fun may backfire, if they are seen as greedy and dishonestly "not really fake".

In terms of concrete e-money design, these findings suggest research into how to manipulate perception of the reality or virtuality of currency one way or the other could be useful. Interestingly, the list of gateway, game-specific and player-specified currencies in Table 1 seems to be in a decreasing order of "realness". This may help designers understand the potential consequences of the money aspect of their design.

Trust

Face-to-face cash transactions (FCTs)

Ironically, many transactions around virtual objects among highly online-savvy individuals in China require physical travel for face-to-face cash transactions (FCTs). The online realm is not a trusted one. In China, Alipay, a trusted third-party payment and escrow service has been widely adopted to cope with the issue of trust in online transactions. One needs to have an online bank account or a credit card to open an Alipay account. Since a large number of online gamers in China are underage and do not have a credit card nor a bank account, they cannot rely on services like Alipay to sell or buy online game resources.

Another important reason for the prevalence of game-related FCTs is the *virtual* nature of online game resources, e.g., online game equipment. One adult informant pointed out that "it's really hard to show proofs of transfer, e.g., how do you prove to someone that you have sent or not received some of these virtual things." FCTs then become a practical way of doing transactions of virtual objects.

FCTs clearly have a large overhead and hassle factor, but they can also be fun – a real-world extension of the online game, as in this reminiscence:

> "After a big family reunion dinner on New Year's Eve, I drove with a friend to buy some Mir 2 stuff. The seller and I had already agreed on the price and place for the deal. When we got to this *wong ba* in a remote village, lo and behold, the seller was an 11 or 12 year old! Our avatars had to be face-to-face in the game to conduct transactions. I didn't use the computer in the *wong ba* to log in the game because I was afraid it might have Trojan viruses. So, instead I called my wife and she logged in my account on our home PC. He transferred [the equipment] and several hundred million game coins to my account in the game, and I gave him 3000 RMB [about 400 USD] in person…*that* [experience] was really interesting and fun!"

As this story of a transaction in interweaving of car, phone, public Internet space, online environment, and private home system illustrates, trust need not rely on any single technology or medium. It also points out that a little danger and inconvenience might not always be a "bug" to be engineered out of the system but could be part of its appeal. As FCTs were valued for ensuring a proper transaction and for the fun of the adventure itself, we suggest FCTs to the CHI community as a rich context for future research and design inspiration.

Sharing accounts with others

The social and collaborative aspects of game play has been of interests to the CHI community [4, 5, 9]. One interesting such practice we have seen across many informants and games is the sharing of game accounts not just to experience the game world from another perspective, but also to maximize individual or collective benefits.

> "This is a group of friends. I am familiar with them, and I trust them. Each of us has about 2-4 characters. We play each other's characters. It's more fun and it's easier to get more equipment."

However, benefits may come with costs. A 12-year-old informant told us his QQ pet was stolen when he shared his account with a group of friends. Another adult informant never shares his account, not because he cares about the accounts, but because he has been using similar or the same passwords for many online services, including ones that would reveal his real-world personal life (e.g., his email).

While sharing game characters or accounts seems to be a common practice enjoyed by gamers, current games often fall short of supporting it. An open question for the game

design community is how to allow for this type of sharing without overly compromising player security and privacy. One step in this direction is the common provision of multiple characters per account, to be "shared" among a single user. These could be used to assess an online stranger's trustworthiness, as one informant explained:

> "If you have good equipment, people respect you. If you have bad equipment, people might ignore you. I use my secondary character to see who is still nice even when I don't have much equipment."

This interplay between apparent and real trustworthiness, leads to our last theme: the slippery relationship between money and fair play, in a world where people can "buy" not just "earn" apparent status and advantage.

Fairness

The role of money in games becomes even more evident in the notion of an "RMB player". An "RMB player" refers to one who advances within a game by spending real money instead of honest play. This considerably challenges fairness, a critical aspect of successful game design.

One informant, a young factory worker, who used to spend 10-20 hours and 15-35 RMB (2-4 USD) per week playing online games in a *wong ba*, resentfully complained:

> "Money gets in the way of playing games…while I can spend 100 RMB [to buy equipment], others can spend 1,000 or 10,000 RMB…it's not fair at all to play with them."

However, it is important to make a distinction between buying virtual equipment from other players and buying virtual equipment directly from the system.

Another heavy and more wealthy gamer told us:

> "Buying equipment from other players is fun, like buying something rare and valuable, whereas buying equipment directly from the system is not fun because as long as you have money you can buy it. Equipment becomes simply a matter of how much money you have…As long as people buy it, new equipment is generated, so it ruins the balance of the game."

Money can certainly add fun (e.g., trading virtual loot [2]), but it can also attack the "autonomy" of game worlds by letting too much of the outside world in [1]. What is worse, it may collapse the fairness foundation of games and drive players away.

A seemingly common practice of game design is to replicate real-world concepts or things (e.g., money and clothing) into the game worlds. It is vital to be aware that these replications may not only "copy and paste" the "look and feel", but often inevitably bring in the mundane, psychological, social and cultural nuiances. Again, as Castronova [1] put it, "the membrane between the synthetic world and the real world is quite porous".

CONCLUSION

The complexities of money have been mostly overlooked in HCI design. This paper aims to unpack the pervasive nuances of having money in the interface in the particular context of online games. Our study of virtual currency use suggests the critical role that money plays in shaping users' experience in online games. Money highlights key issues in virtual worlds (and networked systems more generally) such as realness, trust, and fairness. Virtual currencies can perish or polish user experience. We suggest future research into areas such as virtual currency design and game account sharing as challenging opportunities to create compelling, rich, and social user experiences.

ACKNOWLEDGMENTS

We gratefully acknowledge Wendy March, Bill Maurer, Paul Dourish, Bonnie Nardi, Tom Boellstorff, Alfred Kobsa, and Norman Su for their help and advice; Silvia Lindtner for assistance in the field; Sameer Patil, David Nguyen and anonymous reviewers for feedback on this text; and our informants for their insights and openness.

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