

Performing a Check-in: Emerging Practices, Norms and ‘Conflicts’ in Location-Sharing Using Foursquare

Henriette Cramer, Mattias Rost, Lars Erik Holmquist

Mobile Life @ SICS, Stockholm, Sweden

henriette@mobilelifecentre.org, rost,leh@sics.se

ABSTRACT

Location-sharing services have a long history in research, but have only recently become available for consumers. Most popular commercial location-sharing services differ from previous research efforts in important ways: they use manual ‘check-ins’ to pair user location with semantically named venues rather than tracking; venues are visible to all users; location is shared with a potentially very large audience; and they employ incentives. By analysis of 20 in-depth interviews with foursquare users and 47 survey responses, we gained insight into emerging social practices surrounding location-sharing. We see a shift from privacy issues and data deluge, to more performative considerations in sharing one’s location. We discuss performance aspects enabled by check-ins to public venues, and show emergent, but sometimes conflicting norms (not) to check-in.

Author Keywords

Location-sharing, check-ins, foursquare, performance

ACM Classification Keywords

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

General Terms

Design, Human Factors.

INTRODUCTION

After years of studies recognizing the potential and complexities of sharing one’s location with other people [1, 3, 4], commercial location-sharing services have now reached the general public. foursquare, Gowalla, Loopt, Facebook Places and Google Latitude are just a few examples of the services available. A number of these have attracted both major investments and rapidly growing user bases (e.g. foursquare >8M users, Gowalla >600k, Facebook Places >30M). While these arguably are still in the early adopter phase, users of foursquare alone had by July 2010 for example already shared their location over a 100 million times [14]. These most popular commercial location-sharing services differ from previous research efforts in important ways. They do not employ automatic, continuous updating of geographical location; instead they

are based on people ‘checking in’ to semantically named venues. From the traditional, automated approach of location-tracking, location-sharing services now place the control with the user providing social media-oriented ‘micro updates’ [16] on their location. In addition, these services feature an interesting mix of public and private sharing, in which individual users may keep their location private or share with ‘friends’ only, but in which all user-generated venues are currently visible to all users. They also involve incentives absent from previous location-sharing applications, such as commercial tie-ins and game elements. In addition, users can share their location with potentially very large audiences, both through the services themselves and by pushing check-ins to their twitter and Facebook accounts; hypothesized in [22] to potentially lead to more performative uses.

In this study we find that the check-in model in itself however also facilitates more performative uses. While Page and Kobsa [18] have studied why people decide for or against location-tracking through Google Latitude, studies on current location-sharing practices with the above described check-in model are rare. Many, if not most, research studies on location-sharing have been conducted using scenarios [4, 20], past location trails [3] or in test settings with small groups of test users [e.g. 1, 3, 20]. Lindqvist et al. [13] describe the wide range of motivations people have to use foursquare, including effects of incentives and game elements, with a slight focus on privacy aspects. This paper combines analysis of twenty in-depth interviews and an online survey to gain more insight into the act of ‘checking in’ and the performative aspects, including perceptions of a check-in by others. It provides insight into how specific design features of ‘a check-in’ allow for more performative uses. In addition, we discuss the check-in from a perspective of the audience; the receivers of the shared location, as well as the audience co-present at the ‘physical act’ of checking in. We show emergent, but conflicting social norms and clashes between for example expressive, playful sharing and audiences’ impression of a check-in.

BACKGROUND & RELATED WORK

Since the ActiveBadge system [10], which allowed for sharing location in the office, a multitude of systems have been developed to allow people to be aware of another’s location. Most of the systems in the research literature have focused on tracking of user location, while providing the user a level of control over what is shared with others [1,

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20], or on specific requests from others for your location [4, 22, 24]. Connecto [1] for instance, allowed groups of friends to tag locations and then automatically share location without user involvement. The Whereabouts Clock [3] focused on coarse-grained sharing of predefined categories within families. Loccacio [20] allows its users continuous live updating of their location, but based on specifications of the people, places and times its user wants to share their location. Reno [11] was based on requesters asking for location, with the possibility of automated tracking. Tracking models have been employed in commercial products as well. Commercial system Loopt (Loopt.com) has a tracking model, providing users the means to see another user's location in a map-based view for a user-specified window of time. While also featuring the (recent) possibility to check-in, Google Latitude also mainly employs a GPS tracking model, in which users get to pick at which level of granularity they share their location. However, many of the most popular, commercial location-sharing services right now, such as foursquare, Facebook Places and Gowalla, instead use a one-to-many, 'check-in' model, which in contrast allows users to create and name 'venues', to manually 'check-in' and broadcast their location to their 'friends' on the service itself and/or to potentially very large audiences on Facebook and/or Twitter. These services differ from those in previous research endeavors in a number of potentially important ways, exemplified by the foursquare check-in model below.

A Foursquare Check-in

When users of foursquare want to share their location, they 'check-in' to a 'venue' using the foursquare mobile website or a native mobile app. A venue has a name, address and associated geographical location and sometimes user-supplied tips and tags. Users can choose from a list of venues nearby, search for a venue, or create a new venue. For each check-in, users can choose to check in 'off the grid' (not share with anyone), share the check-in with their foursquare 'friends', to push their check-in to Facebook and/or Twitter. When checking in, users see which other users have already checked in to the venue in the last three hours – and the total number of check-ins to the venue since its creation. While previous systems may have for example employed user-generated semantic location naming, foursquare venues in contrast are community-generated. *Check-ins* can be private, but all *venues* created by users are currently accessible to all users, and shown if they are nearby. Only venues labeled as 'homes' do not show unless users explicitly search for their name. foursquare employs gamification elements like points, badges and mayorships to increase engagement with the service and motivate checking in more frequently. Users for example get points for checking in, badges for certain combinations of check-ins and 'mayorships' of venues for checking in most. They also feature commercial tie-ins with businesses offering discounts based on check-ins and mayorships. Users can search for venues and check in when not actually there, but

will for example not receive points, or mayorships when their GPS- or network- location do not match venue location. Users have a publically accessible profile page, they can choose to use their real name, and link to their Twitter and Facebook profiles.

The potential of check-in data generated by foursquare users is being explored by multiple researchers. Cranshaw et al. [7] for example use public venue data to distill canonical neighborhoods. Scellato et al. [22] analyze the socio-spatial characteristics of ties between users. Cheng et al. [4] use check-ins to gain insights into socio-economic factors in mobility and people-place relationships. While check-in data has great potential, motivations for check-ins and how they are perceived cannot be read from this data.

Motivations for Sharing Location

Tang et al. [22] point out that one-to-many sharing with friends or followers is more complex than one-to-one or one-to-few sharing. Rather than deciding whether users want to share with one specific person or a limited group, they now need to decide whether to share with a varied audience with whom they share their locations for different reasons. For services such as foursquare especially they hypothesize that the connection to larger audiences via Twitter or Facebook may lead to more 'performative' uses, rather than for example use as a coordination tool. As Brown et al. [3] point out, the value of location technology is not in tracking or communicating location; it is about how this is used, read, viewed and manipulated. Sharing one's location and knowing the whereabouts of others is not only a practical tool for coordination and communication [3]. While Tang et al. [22] distinguish between 'purpose-driven' sharing (e.g. for coordination) and 'social-driven' uses, Brown et al. [3] argue that location-sharing is not just about practicality and accurately sharing location, or one's activity there; rather, location sharing is an emotional and moral affair. It is used not only to express whereabouts, but also moods, lifestyle and events [1]. It can support social repartee and tell the ongoing story within social groups, while also providing a resource for other interactions and a tangible representation of shared locations, supporting exchange enjoyment and friendship [1]. People can for social purposes share information that is interesting, enhances self-presentation and/or leads to serendipitous interactions [22]. Location-sharing can also serve as a reassurance, communicating and knowing that all is well and as it 'should be', bringing a sense of connectedness, togetherness and identity and moral position within the group you share your location with [3, 11]. For location-sharing via foursquare, using a set of interviews and two surveys, Lindqvist et al. [13] identified clusters of motivations for sharing one's location using foursquare, including games and badges (which included both playing for fun, but also self-presentation and being proud of badges), social connection (keeping in touch, ad-hoc meet-ups, seeing where friends have been), place discovery and keeping track of places), and meeting new people, but also

simply ‘something to do’. Rather than focusing on these motivations for checking-in and privacy considerations as in [13], we focus on performative aspects of check-ins, their ‘audience’ and emerging social norms on when to check in and whom to share with – and their conflicts.

Location-sharing from a Performative Angle

Goffman [9] describes interactions between humans as performances, in which the actors provide an impression of the self. These impressions can be intended, or unwittingly given off and perceived as such. Reeves et al. [19] describe users of public interfaces as ‘performers’, and described their use as manipulations and effects that can be *hidden*, *partially hidden*, *transformed*, *revealed* or even *amplified* to spectators. Users can be seen as simultaneously having the roles of operator of a system, performer and spectator [8]: spectators observe the interaction between user and system, co-present and directly, or mediated in some form. Users’ awareness of these roles affects users’ behaviour. Social media users for example construct their identities and present themselves according to what they think is appropriate for the imagined audience [15]. Specific to location-sharing Barkhuus et al. [1] for example describe how users manage their self-presentation through location and activity naming, and describe how awareness of each other also affected sharers’ own self-presentation.

An abundance of studies is available on privacy and when, and with whom, people would want to share their location. Which location information is shared can depend on with whom the information is shared, for what it is used [4], and ‘right’ and ‘wrong’ places to be [3]. People are more willing to share with close friends than with strangers [12]. Although there may be strong unwritten rules against interpreting location-sharing as an invitation to ‘just show up’ [2], revealing location is often seen as announcing that one is willing to be found [22, 25]. People can evolve sophisticated privacy preferences, with time- and location-based restrictions [24]. Strategies are also dependent on the motivations people have for sharing their location, with for example blurring of location and presenting information that boosts their image for social reasons [22], or preserving plausible deniability [11]. Some researchers conclude that people are hesitant to share their location and would only do so when they see a clear need to do so and usefulness to the people they would share their location with or request it [e.g. 25]. The latter however do not consider current practices on current commercial services such as foursquare [13]. While Page and Kobsa [18] did identify privacy concerns in people’s use of Google Latitude, they identified several other more salient tensions such as social conformance and trends, filtering of location and audience management. Barkhuus et al. [1] also point out that location privacy must be understood in the context of continual communication and sharing within social groups. People do not just worry about possible reactions when they deny to share their location [25], practical use, the desire to express and share experiences, mood and activities and awareness

of reciprocity can outweigh any concerns about privacy [1]. Instead of focusing on privacy, we here investigate the role of performative motivations, and what happens when a check-in is ‘read’ by audiences with possibly different usage motivations.

METHOD

We here use semi-structured interviews and an online survey to gain more insight into the motivations for ‘checking in’ and performative and self-presentation issues that might arise due to the specific characteristics of sharing through check-ins. Participants had already been using foursquare before they took part in the study. Participants were recruited via Twitter and Facebook, including ads, and via our personal and professional networks.

Interviews

Interviews were open-ended and semi-structured and included a core set of open questions for all interviewees (in all settings). These included questions on their motivations for checking in, with whom they shared their location, which locations they would (not) share, what they liked and disliked about the service, the influence of incentives and game elements, locations more or less desirable to share and their perceptions of other people using the service and (un)acceptable check-ins. Interviews lasted approximately 30 – 150 minutes, depending on participant time constraints. Interviewees ranged from students in their early twenties to professionals in their late-thirties, including a bus driver with varying routes, IT consultants, an event organizer working from home, students going to class and working in various labs and researchers (non-local). Fifteen were male, five female. They lived in the US, Sweden and The Netherlands. Interviews were recorded, except for one case per interviewee request, and notes were taken. Transcriptions and notes were analyzed using open coding.

Survey

To gain additional insight into the motivations for checking in and potential audience management, a 10-25 mins online survey was conducted. Data from 47 foursquare users was analyzed, who had been using the service for 1 month to over 2 years (Mdn: 11 months). Ages ranged from 15 to 47 (M=31, SD=7). Of the participants who provided their gender, 37 were male, 7 female. Participants lived in the US (24), The Netherlands (6), Sweden (4) and 12 other countries. Quantitative Likert-type scale items were combined with open-ended questions. Items focused on respondents’ most recent check-in, why they checked in in general, with whom, why they did or did not share their current location (i.e. the one they were at while filling out the survey) and types of places (not) to check-in. In this paper we focus on those items and responses geared to impression management. Qualitative responses were clustered and coded using open coding analysis.

RESULTS

There was a wide variety in why and with whom our participants shared their location; to provide a background

to our discussion on performative and audience management aspects of check-ins, we will first discuss the motivations for sharing encountered. We then discuss the audience of these check-ins: with whom our participants shared their check-ins with and their considerations in doing so. We will then focus on the performative aspects and emerging conflicts that arise from perceptions of other users ('the audience' of both check-ins and created venues) that appear to lead to both conflicts between different emerging norms, as well as impression management.

Motivations for Sharing

Motivations to check in for our participants in the survey and interviews went beyond the categories of 'purpose-driven' sharing and 'social-driven' sharing as identified in [23]. As in many previous studies on location-sharing [e.g. 1, 3, 22] we found that utilitarian uses for coordination and communication were a common motivation for checking in. Knowing when to leave to be on time for a carpool meet-up, or implicit invitations facilitating serendipitous meet-ups, were examples given by participants in the interviews and survey in which using a check-in served as a lightweight communication tool negating the need for calls or text messages.

As in e.g. [1, 3, 4, 22] we also found social- and identity-driven uses such as sharing lifestyle, events and sharing of information that is interesting and enhances self-presentation. We can largely confirm the findings of Lindqvist et al. [13]; similarly, we also found a number of examples of uses previously largely absent from literature, such as check-ins for discounts, gaming purposes, diversion, discovering new places and new people. We also uncovered various additional uses, enabled by the public visibility of mayorships, and other users checked in at a venue at the same time, and norms related to these. This for example made for a new type of use: learning about the people who frequent a venue. Some participants were for example curious about strangers that were the mayor of a place; which was facilitated by access to their Twitter or Facebook accounts when they had chosen to make these visible to all users. As an interviewee explained: *"I love this like, window into this other person's life. It's like, we intersected at this one point, but I can see all their Twitter... It's like what type of person they are on Twitter"* (I9, F, US)¹. She however added that then following on Twitter would be ok, but that adding them on foursquare would not be.

Because of the public and lasting nature of venues, location-sharing through check-in also became a recommendation or way to share experiences with others in the surroundings of a venue - not just 'friends', but an audience of strangers as well. Checking in could be

intended as personal support to a venue: *"I check in to Clover's, because I want to express my support for them"* (I9, F, US) (a check-in in that sense was similar to using the Facebook 'like' button). Endorsement did appear more complicated than just liking a place, as the same participant explained her endorsement habits and an exception: *"if it's a local business, I check in and I often don't check in at places that are not local. Except to like Ikea [...] I love Ikea, I don't care if it's not local. I think it is wonderful and fashionable and magical. And I would live there if that was allowed"* (I9, F, US). Due to the public nature of venues, 'friends' would see the check-in, but a wider audience of fellow users in the surroundings could also see that other users had been there and how popular it was in terms of number of check-ins and could be used *"in looking for a bar or restaurant to go to; the tips/to-do's are useful to see why it's a good or bad place to go"* (S, M, US). Some of the interviewees indicated that they thought foursquare were still a somewhat 'elite' group, and they reported using such 'recommendations', mostly for serendipity in getting to know new places or for e.g. purposely finding restaurants nearby that would suit them. Some of them however noticed the usage of the service as a whole in their area had shifted, with check-ins not necessarily being an endorsement anymore, and as more users came in they also perceived 'endorsement' check-ins as less valuable.

Instead of listing all uses and motivations for sharing encountered in our study, we will now focus on the audience of a check-in. We will discuss performative aspects of checking in, how check-ins are perceived and audience management by users.

The Audience of a Check-in

Interviewees reported 1 to 92 'friends' on foursquare, while the 47 included survey respondents reported having 0 to 145 'friends' (Median=19.5, 'top three': 145, 127, 122, SD: 35). It has to be noted that the number of friends appears quite varied, and an informal look at user profiles on the foursquare website for example did yield a number of users with 500+ 'friends' (two survey respondents reporting over 500 friends were excluded from analysis here). Survey respondents reported 'friends' on foursquare to include actual friends (91% of participants), colleagues (53%), other work contacts (51%), supervisors (17%), partners (17%), siblings (4%), other family (15%), parents (2%) and 'people I didn't know, who requested to be my friend' (21%) when explicitly asked for each category. Other mentioned contacts included online contacts such as Twitter contacts, promotional accounts of companies such as MTV and celebrities (note that the latter two categories are usually unilaterally 'followed', rather than 'shared with').

While survey respondents appeared to agree that friends are desirable to (at least at times) share one's location with, the picture was much less homogeneous for 'undesirables'. The leading categories survey respondents rather did not want to add as 'friends' were 'people I don't know, who would

¹ Interviewees denoted with Ix, survey respondents with Sx. M/F= Male/female. Abbreviation for country of residence.

request to be my friend' (62%), parents (32%), supervisors (28%), 'other work contacts' (15%) and colleagues (11%). Interestingly, the three work-related categories (supervisor, colleague, other work contacts) both appear in the list of survey respondents 'friend list' as well as categories with whom they would rather not share with. Interestingly while 21% shared with 'people I don't know, who would request to be my friend', 62% of participants indicated they would rather not share with unknown people. Note that this may indicate a difference in how people value sharing location, but also an indication of different interpretations of 'not knowing' someone.

Exploring why people befriended others during the interviews, it is noteworthy that one interviewee (a woman in her thirties working as an event organizer) with 92 'friends' still considered these her "inner-circle" (I20, F, NL). Sometimes just knowing people from online interactions was enough (similar to the findings of Lindqvist et al. [13]): *"I happen to have added all my Twitterers just this weekend"* (I4, M, NL). Consequences in real life, such as facing the consequences of being at an inappropriate place or encountering the person in question, appeared a key factor however whether or not to 'add' a person. Participants for example explained that *"I'm only friends with people [for whom] I know I can check in anywhere"* (I6, F, SE) and *'People I wouldn't want to have a beer with I wouldn't add on foursquare'* (I3, M, NL). As another interviewee noted, a complete stranger might in that sense be less undesirable to know your location than someone who is supposedly a friend, but in actuality you would rather not meet up with (a 'frenemy'). He also noted that there was no way of knowing whether a 'friend' was really who they claimed to be anyway (I21, M, NL).

Not fully feeling in control over what the service would do, sometimes played a role when deciding whether to add someone whom participants were weary of leaving a bad impression with. Some (but not all) foursquare application versions can for example notify users when friends check-in nearby. One interviewee exemplified this by explaining how at first not wanting to accept the friend request of a relatively influential person in his work field as he did not know what the consequences of sharing his check-ins with him would be: *"I don't know what notifications they have, so I don't know whether it's going to buzz his iPhone at 2 in the morning or like, I don't know how he's got it set up, and so I was really hesitant"* (I7, M, US)

Audience management on Twitter and Facebook

Confirming a more performative attitude towards location-sharing, participants in both interviews and survey reported engaging in audience management, with some 'more special' check-ins pushed to Twitter and Facebook, while others were kept for 'friends' only, especially when faced with pushback on for example 'oversharing' on Twitter.

Survey respondents were explicitly asked about their last foursquare check-in and with whom they had shared the

check-in. Of the 68% survey respondents who had connected their Twitter and foursquare accounts, 63% actively decided against sharing this specific check-in. Of the 57% who had connected their Facebook account with their foursquare account, 63% decided to not push this specific check-in to their Facebook wall. Fairly few survey respondents mentioned privacy considerations as a reason why not to publish their check-in to a wider audience (7 out of 39 statements provided for example on why not to share with Twitter followers), instead survey comments focused mostly on the audience perceptions of their check-in as a potential annoyance; not clogging up people's streams, and "spam" considerations, for example *"I have 1500 Twitter followers and they may not necessarily care that I'm about to eat a burrito"* (S, M, US). There was also separation of for which network a location update would be appropriate: *"on Facebook it would be spam, but on Twitter people more like this sort of update"* (S, gender & country not provided). In this regard, our findings resemble the study of Consolvo et al. [5], who found that people did not only limit sharing their location because of privacy considerations, but also to be polite and not disturb others. Sharing one's location with a larger audience also appears to involve a consideration of the motivation why to check-in, one survey respondent pushed a specific check-in to Twitter to reach a wider audience as a public thank you to a venue owner (an education center): *"I was grateful for the invitation to be there and wanted to generate some exposure for the guy who invited me"* (S, M, NL)

Check-ins with Sharing as a Side-effect

As seen above, there appear to be norms (even while sometimes conflicting) on which audience a check-in would be appropriate for. However, we want to note that while location-sharing is a social affair, the motivation for using location-sharing services and checking in is not always about sharing one's location with others. Notably, 19% of our survey participants reported they did not share their last-check-in with anybody else (including their foursquare contacts). Such a check-in could for example serve as a personal bookmark: *"I did check in to the restaurant we went for lunch. Because it was kind of cool and if I check in I can remember it"* (I7, M, US). These were not 'meant' for an audience, but were shared – rather than made deliberately 'off the grid' by unchecking the default setting of foursquare to share with friends; and thus had sharing as a byproduct. In contrast to the findings of previous studies [4, 20, 25], which found people only share location when they see a clear social or practical need to share with others, a check-in is also not always a deliberated decision to share with others. Sometimes checking in is also just something to do, another way to relieve boredom, with the check-in itself as a byproduct: *"If your business meeting is boring for a moment then you think, oh yeah, I could check in now"* (I21, M, NL). However, these check-ins still have a potential audience – either co-present at the check-in itself, or as readers of the check-in.

NORMS AND 'CONFLICTS': PERCEPTIONS OF A CHECK-IN

As Brown et al. [3] point out, sharing one's location is a social negotiation with whom you are sharing with. Check-ins have an audience, which can be much larger and more varied than those in most previous location-sharing studies. Over a distance, check-ins and created venues can be read by other foursquare users, and potentially by wider audiences of Facebook and Twitter contacts. The service and its representatives also promote certain norms as to when and where to check-in. Locally, checking in requires the 'physical act' of turning to a mobile device, possibly in the physical co-presence of other people. Considerations of these audiences appear to influence norms on when and where to check-in and whom to share with.

Below we provide a number of examples of how specific service design elements allow for expressive uses, as well as the emergence of norms and 'conflicts'. Both long-distance and local performance and impression management considerations appear in the check-in process. We center the discussion around three features of the check-in model. We first discuss *long-distance* self-representation issues surrounding location-sharing using check-ins, resulting in (private) check-ins, as well as community-generated (public) venues. Second, we turn to the effects of gamification elements and potential tensions between 'gaming' and audience perceptions of resulting check-ins. Thirdly, we discuss *local* self-representation issues surrounding the 'physical act' of manually checking in on a mobile device.

Perceptions over a Distance: Venues and Check-ins

'Alternative' Check-in Venues

Existing foursquare venues (accessible via foursquare.com) reveal playful and expressive uses that have not yet been addressed in literature. A relative freedom in creating venues facilitates for example the existence of venues such as 'in your pants' (a venue 'in NY'), and 'Heatpocalypse NYC' with 9426 check-ins during the 2010 summer heat wave. Extending previous literature on self-expression through location-sharing, one interviewee for example often would check into his home, but had given its venue a name consisting of in-crowd references to his hobbies. Venues are user-generated and do not need to necessarily 'match reality', they do not need to exist, nor does a full address need to be filled out, and the user's location in terms of GPS coordinates does not need to match the location of the venue (unless the user wants points, badges and mayorships). This allows for sharing much more than just location, one survey respondent for example described the reason for his last check-in as: "*Because it is an imaginary place, as opposed to a 'venue', I want to express myself in terms of place, not just create a history of my consumer behavior*" (S, M, US).

The community-generated set of venues allows for discovery of new places and sharing experiences with

others, but can also lead to conflicts about which venues 'should' exist. The public and permanent nature of venue creation means that while specific check-ins may only be read by a limited audience, all created venues are also 'read' by another audience: other users who at a later time are trying to check-in in the surroundings of that venue. Check-ins that might have been informative or fun for a small circle of recipients, can at the same time be very annoying to readers of the venues around them: "*Like... you go to a sandwich shop and there's an order line and a pickup line, and someone checks in at the order line, they check in at pickup line, I think that's kind of stupid [...] you're checking in at the bathroom at the sandwich shop. It's getting to that point*" (I7, M, US) and multiple interviewees mentioned the common annoyance of checking in at airports and having to scroll through gates, flights, terminals and a host of other venues resulting from travel-related check-ins by others. These venue readers were not necessarily in-the-know why a certain venue has been created, and in which social context, to them these were just an inconvenience, making finding the 'real venue' they were looking to check into much harder.

Expressive naming of venues, or creating 'fantasy' venues was a source of pleasure to some participants, but an irritation to others. One participant for example talked about creating a notorious highway overpass as a venue when he was again stuck in a traffic jam. Instead of adding the official overpass name, he created "*Route 12 in the annoying traffic jam*" (I4, M, NL-translated). This provided a means to share his experience with both his 'friends' and others with the same commuter experience: "*you'll never find that in the phone book, such a place, but you can see a lot of people check-in, because they are stuck in the same place*" (I4, M, NL). He recalled how he first was in doubt whether to create the venue, but then decided that he 'was there' and could thus create it. When looking up the venue page during the interview however, he found out that a 'super user' (a moderator-type user, granted rights to change or delete venues) had changed the venue name into the official overpass name. While the interviewee was amused that he could still see that many people had checked in before, it now was "*not as exciting*" anymore. Here, a playful, local performance appeared to be not understood by an anonymous super user, or in conflict with other values of what constitutes a 'venue' that should or should not exist on the service. Indeed, another interviewee described his annoyance with finding 'non-venues' and stated it was preferable "*to have a full database of real places, instead of fantasy*" (I5, M, NL).

Check-ins as a Source of Information

Some receivers had a strong negative response to check-ins that they perceived as 'unmotivated'. Especially homes and work places appeared controversial: "*I hate people who check into their homes. [...] I had a friend who checked in to his home all the time and he checked in at 7 PM and he'd go to the supermarket, and he checks in there, and he'd*

check in again at 9 PM [...] And I was just like, dude, what are you doing? I don't care that you're home, I'm not your mother" (I7, M, US). A change in social context and perceived usefulness to 'the audience of the check-in' could however make a check-in at a 'venue-non-grata' acceptable: *"I don't really care to see that my friends have gotten home, because they get home everyday, between like six and seven [...] But at the same time, I would be very interested if other people were checking in [there], because that meant they were having a party and that ... and that, like, is an information thing"* (I10, M, US).

The perception that the audience of a check-in might actually use the information provided in a check-in to go somewhere, instilled a moral sense in some participants that 'receivers' would not appreciate 'fake' check-ins that would not be recognizable as such to one's inner circle. One interviewee even described how one of his friends had a check-in checked out by a friend *"...just to check whether [he] was really there. Like, you're checking in so often, that cannot be true"* (I3, M, NL). Such considerations also turned the service into a self-motivational tool for some people: *"last Sunday when we [my boyfriend and I] were tired [we were saying] ah are we really going to the music cafe? yeah..if.. that would be really cool to check in there.. so..just sometimes we go to places just to check in. But not just passing by, we actually have to be there."* (I6, F, SE) The social check-in thus would turn into a personal goal, but one that would only count for them if they would actually 'be there', involving more than just passing through or even a quick stop.

Gamification

foursquare employs gamification elements and rewards as incentives for check-ins². Users automatically become the 'mayor' of a venue by checking in the most at that specific venue during the last two months. Mayorships are publically visible on users' profile, and are also shown to any user checking in to that venue. Badges, visible on one's profile, can be earned for checking into specific types of venue. Users for instance get a 'jetset' badge when they have checked into five different airports. Users also earn points for check-ins, and a leaderboard shows their ranking compared to their friends and other users in the same city. Indeed, a selection of participants reported checking in and sharing their location specifically for game-related purposes, with mayorships and badges being the most compelling. When survey participants were asked for the reason for their last check-in 8 of the 44 open-text responses indicated mayor- or badge-related motivations (e.g. *"Trying to steal the mayorship"*, *"Wanted to regain mayorship and im [sic] collecting for a new badge"*). One interviewee (I4, M, NL) even specifically set out to try and figure out how to get them and tried to manipulate his check-ins and venues to see whether he was right.

Gamification-elements did not appear to be the main reason to check-in for most and an interviewee for example noted: *"...I had that player badge [checking in with 3 users of the opposite gender] really quickly...so that's a lot of fun ...but it's not like I'm doing stuff specifically for it"* (I9, F, NL). These game-elements also have diminishing effects for example when a mayorship appeared to become unattainable. Regardless, sharing one's location indeed in some cases game or reward-motivated, rather than focused on coordination or social sharing.

Gamification elements engage users, but also have to co-exist with other uses of the service, which can result in conflicts. Especially being the mayor of a venue appeared to be seen as a social signal of ownership over the venue and personal identity. Badges to show off one 'goes places' and 'mayorship battles' did engage a selection of participants. The badges and mayorships however would both facilitate and complicate motivations for checking in related to building identity and 'showing off' for others. Opting out of badges and mayorships was not possible, sometimes resulting in worries about getting mayorships or badges participants did not want, because of threats to identify or because it would feel inappropriate or undeserved. One participant for example was wondering whether it was ok *'from a business perspective'* (I20, M, NL) to become the mayor of the office of one of his clients. A mayorship appeared to a certain extent communicate public ownership over a place and established identity, which was not always desired. Gaming was indeed sometimes perceived as not respecting 'ownership' and social boundaries: *"...there's another roommate, [he is] like my best friend, [...] I've been to his office like 50 million more times than this other guy has, but he escalated that, he made that part of the game, and it wasn't part of the game before. I thought that was kind of unfair. [...] it felt like it was more my place and like, in a social sense, than it was his place. But then he claimed it in the game, and that felt wrong to me. And it got him the supermayor badge. So like, I felt like he was playing it too hard"* (I10, M, US).

An interesting observation during the interviews was that some interviewees referred to using foursquare as 'use' while other referred to 'playing' and 'fellow players': *"So like before, my girlfriend then wouldn't play" and my roommate then wouldn't play, and so we'd get somewhere and there'd be the three of us and we'd sit down, and I would pull my phone out and they'd be like, really?! and I'd be like, yep, and then do it. And they'd be like, okaaay."* (I10, M, US). Interestingly some check-ins, while technically not 'fake', would be perceived as cheating when a reader of a check-in perceived the service mainly as a game. Most participants however reported a rather 'laissez-faire' attitude towards other people's gaming: *"if you'd like to be mayor of a stone on the sidewalk, I think that's fine too"* (I4, M, NL) and acknowledged that while they even sometimes argued with their 'fellow players' there were no set 'rules of the game'. As one participant explained: *"what*

² See also our discussion using this study's interviews in [6]

happens now is we begin to construct our own rules, because there aren't rules" these may stabilize over time, "...or you just change the game and check in at other places" (I8, M, US).

When introducing game-elements, a need for rules from the service itself may however emerge. Foursquare for example warns users they will not receive points, badges or mayorships for more than three check-ins within 15 minutes. An interviewed bus driver however did not use the service to share or 'play', instead he used the application on his mobile phone to check in when driving his bus and waiting at stops. He found this a welcome diversion, and could now also revisit his routes in his check-in history. While these check-ins had no intended audience of other users, the service itself could serve as a disapproving audience. The bus driver for instance recalled that when checking in on the stops of one of his routes, the application would start telling him he was checking in too much to get points. He then decided that he apparently "*must be using it wrong*", something arguably limiting usage of the service.

The Physical Act of a Check-in

While a check-in involves long-distance self-representation as discussed above, checking in also requires the physical act of turning attention to your mobile device instead of your physical surroundings, including other people present. When in the presence of others, the physical act of checking-in becomes part of the 'frontstage' in Goffman's [9] terms, rather than an invisible 'backstage' activity. A check-in then does not only involve a consideration of how a check-in is perceived, but also local self-representation considerations. To many participants it was socially awkward to actually pull out a mobile phone and check-in in the presence of others. Some would adapt their check-in routine: *"If I'm with multiple people, I usually check in earlier. If I'm with one person I usually wait until that person has gone to the bathroom or something"* (I2, M, NL). Whether people around our participants knew and were using it themselves and their attitude towards the service played a major role. Some described 'getting caught': *"I've been caught by my wife, ehm... doing it under the table. I pulled it out, like, like at breakfast, like what are you doing? And I'm like... she's like: 'you're checking in to foursquare' she's like: 'that's not coming here. Like, it's Sunday morning, like what are you doing?'"* (I8, M, US)

However, exactly such 'social unacceptable' aspects of using the service also invoked playful behaviors - making usage of the service a more bonding experience within the social group users were using the service with. This was especially apparent for users that saw check-ins not as a tool for coordination and communication only, but also as a game-element or playful goal in itself: *"...it's maybe not professionally appropriate to do it, right. So that happens as well, so our group will do it, but if we're in a situation where it's probably not the best to exhibit such adolescent, teenage behavior, we won't. What happens then it becomes*

a way of... like I was saying, the social part... who can do it most subtle. and like, revel in the victory of doing that, without being in your face about it, you know.[...]we'll do like a head nod or some sort of visual cue and the other one will be like, you...you got it...this time" (I8, M, US). We now see both non-users and fellow users becoming part of the experience as partial spectators as described in [19]. The act of checking in is either hidden for the spectators to for example avoid their ridicule or disdain, or first hidden and then expressively revealed to spectators who are fellow 'players' to amplify the shared experience.

DISCUSSION

Not all check-ins are meant as self-expression, motivated by self-presentation factors, or even deliberately meant for others. We have however shown that (expected) consideration of the potential audience of a check-in plays a role in emerging norms and conflicts between different types of motivations. Interestingly, we do not know how often the potential audience of a check-in actually looks at their friends' check-ins and which venues are seen by other users; still this potential is affecting sharing, similarly to the imagined audiences in Marwick and boyd [15]. Which norms and motivations will prevail over a check-in will not always be predictable. Conflicts between, and combinations of, different appropriations of a service occur. A check-in can at the same time be motivated by a desire to inform friends of an event, get a coveted badge and 'something to do' during a moment of down time. A user can be a 'gamer' at one time, while at another occasion only interested in informational venues. Avoiding conflicts will be impossible, and not even desirable; the challenge might rather be to have different appropriations co-exist and even to take advantage of these conflicts to make services more engaging. Separating 'play', 'expressive' and 'utilitarian use' is not always possible, as multiple motivations may be at play and users switch roles (as exemplified by interviewees' use of both terms 'play' and 'use').

From both the new appropriations and conflicts above result in a number of considerations for design of location-sharing services. First of all the flexibility offered in the types of venues that can be shared opens a service to creative usage and appropriations not considered in design. If checking-in had been limited to 'real places' of only one level of granularity with a real address, and e.g. a match with 'actual' tracked GPS-based location, users possibilities for self-expression (as well as privacy management and plausible deniability) would have been very limited. Designers need to be sensitive in making sure that while they may envision a certain desired usage, telling your users 'they are using it wrong', might not be a viable strategy. While user-generated content, such as the creation of venues, may create a need for moderation, giving super users -who might not understand a local context and others' in-jokes; the power to change and delete venues requires care. A partial solution to an overload of 'nonsensical' venues would already be possible by allowing users to self-

regulate by allowing for creation of temporary venues that expire, events and/or private venues that are only shared with a specific group. When applying gamification features, it's important to consider how these may restrict other types of usage; opting-out of a badge or mayorship would for example already help those participants worried about self-presentation and ownership issues.

We would like to note that perceptions of what a check-in means is likely to change when foursquare moves beyond the early adopter stage. Usage of location-sharing services cannot be viewed in isolation from existing social networks and the audience of a check-in is widely varied, ranging from bystanders, receivers, fellow 'players' or 'friends' in the know, Facebook and Twitter followers, to strangers that see the publically accessible venues. Unintended negative consequences of check-ins and the way other information can be combined are most certainly not unimaginable. Users have a need for knowing what the effect of their check-in will be, beyond avoiding e.g. the mentioned worries about buzzing someone else's phone at 2AM. We find it important to further investigate how for example rewards will weigh against privacy considerations when these services become even more commonplace. An intriguing aspect is ownership over a venue and the possibility of public creation of venues of 'really owned' by (unaware) others – a non-user might not know his house and address could be a venue on foursquare. All of these deserve much more attention. However, the growing use of these services and the millions of check-ins show that many people do want to share their location and enjoy doing so.

CONCLUSIONS

This study has shown that while previous research has provided us with interesting insights into the issues surrounding location-sharing, researchers could not envision all aspects of 'checking in' on a large scale. Users appear to share with both smaller and much larger audiences than imagined. Sharing is sometimes only a byproduct, with 'check-ins for me', checking in for rewards, gaming and becoming the mayor, points and badges, life-logging, diversion and voyeuristic uses unimagined in most of the previous location-sharing systems research. A check-in is not always motivated through the desire to 'perform' or enhance ones self-presentation. However, performative aspects as in [8] do appear to play a large role in shaping interactions. The roles of spectators and performers are reflected in our participants' attitudes toward check-ins; and awareness of these roles affects their behavior.

We saw users adapt their check-ins to norms of what they perceive as worthwhile check-ins - and that they to a certain extent expect others to do the same. Many participants checked in at what they perceived as more interesting places and in some cases tried to minimize annoyance to others that may result from check-ins that they thought would appear uninteresting. Both the co-present audience

observing the physical act of checking-in and the distant audience that (may) see the resulting check-in is considered. We also see the service, and its 'super users', sometimes serve as an (disapproving) audience and not only a system to be operated. Indeed, we have shown emergent and conflicting norms (not) to check-in, and clashes between playful, expressive motivations and informational, coordination uses. Norms are affected by the specific design characteristics of these services, including the mix of game and service, as well as public and private sharing. Norms are however not hardwired in a service, but constructed within the social group(s) of who a 'user' - or 'player' - perceives as his fellow users. Rather than avoiding these conflicts all together, the challenge is to have different motivations and different audiences co-exist, and perhaps even where possible use the conflicts and 'less acceptable performances' to make services more engaging.

Rather than performative aspects playing a larger role because users can reach larger audiences (as hypothesized in [23]), the user control over where and when to check-in appear to facilitate such expression and presentation. In previous research systems, location sharing has been mostly implemented as an automatic feature, where the user's location is continuously reported to a central system and accessible to other users. This approach gives rise to major privacy issues, since people may not be comfortable with sharing their location on a continuous basis [24]; but also allows for less expressive behavior. The check-in approach, on the other hand, allows users to selectively report their location, when and only when they are comfortable with and see reason to do so. The initiative lies with the user, not the system as it did traditionally in tracking systems such as The Active Badge. Ultimately, what this means is that location has changed from being something you *have* (a property or state) to something you *do* (an action). This is much closer to how users have taken to social media, such as Twitter and Facebook, and represents the many 'performative' aspects of location sharing, which we identified in our interviews and survey.

Thus, on a fundamental level, our results represent a major shift in the use and perception of location-sharing services. While it may seem that the check-in's introduction mainly addresses technical issues (including limited battery life and localization limitations), it actually gives the user new ways to express themselves, while at the same time mitigating problematic issues such as privacy. More speculatively looking to the future, our results perhaps may turn out to hold not just for location sharing, but for all kinds of mobile systems that sense and report a user's context. While many previous user-adaptive mobile systems have relied on automatic and continuous detection and presentation of the user's state, future users will be used to the social and performative model that foursquare and other check-in based systems represent. Rather than be constantly tracked, users will selectively share their sensor data, be it physiological readings, locations, activity sensors, or

something else. Just as today users check-in to a sports arena to share their experience with others, tomorrow's user might be posting the reading from their heartbeat sensor on Facebook to express their excitement. Then, sensor-based services become part of the user's interaction with an audience, just as foursquare and others have turned out to be today.

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