

# Designing for Social Use in Public Places – a Conceptual Framework of Social Interaction

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**Abstract.** Most interactive technology is designed for the individual user pursuing either a work-oriented accomplishment of tasks or an experience-oriented aesthetic/pleasurable endeavor. In the project here presented that design paradigm is turned up-side-down focusing on social use and social context. I furthermore argue that this social user perspective can be applied in other design projects and I provide a designer's conceptual framework of social interaction, based on both a theoretical and empirical background.

## 1 Introduction

The goal of this paper is to question the standard outset for designers developing interactive technology for individual use. Human beings are social creatures and many of our activities are socially defined and dependent. Social context and social use are important aspects of the appropriation of most digital products, and an important point for designers to focus on when designing technology that aims at fitting into the fabric of the users' everyday lives.

Therefore I propose a conceptual framework for interaction in social spaces aiming at focusing designers' attention to social use and social context, and providing designers with a tool for deciding what kind of social interaction to develop for. The conceptual framework is based on the work of sociologist Erving Goffman [1] notion of rules governing behaviour in public places. Furthermore the framework is based on the empirical design research study of making and implementing the iFloor [2], an interactive floor prototype installed in a library in order to enhance the level of social interaction and knowledge sharing. The iFloor prototype and the process of designing it are presented as a design case for exemplifying and explaining both the concepts of the framework and the impetus for making the framework in the first place.

## **2 Designing the iFloor - social use of a digital information artefact**

In this example the social interaction was deeply rooted in a context well known to most of us namely the public library.

As many other libraries (e.g. [3]) the Municipality Library in Århus is in the starting phase of redefining their role in the local area as well as in a wider political institutional sphere. Librarians view their institution as one of the foundational pillars of democratic society as it is a place for exchanging and seeking knowledge and information on a very wide basis and on your own accord.

Different kinds of digital technology services have been introduced for the library users: Internet reservations of books and other item, automated drop off of borrowed items and recently also unassisted pickup of reserved items, going to the library has become an almost fully automated activity. If you are familiar with the system, you can use the library to its full extend without ever coming into contact with another human being. So it becomes important for the libraries to develop new ways of stopping the users in their efficient search in order to “sell” books, knowledge and experiences, that the users had not anticipated.

In that sense, the library becomes like a micro version of our industrialized service society. If you master the system and all its services [4] you can walk through your daily business without meeting another live person unless you actively choose to do so. Put to the extreme, the digital ambient technologies of present day allows or entices the individual to walk through life in a bubble [5]. In an effort to achieve efficiency the goal in service design seems to be never having to ask for directions because of GPS-services or never having to talk to real people on the phone because of automated self-dial labyrinths. The development of modern technology is one-eyed individualistic in many respects, but the people using it are only engaged in strictly individual activities some of the time. A big chunk of the rest of the time they are part of something bigger than themselves. This is a good reason that we need to look at these people in plural – as a collective, as we want to make relevant designs and developments of technology for real people in real life.

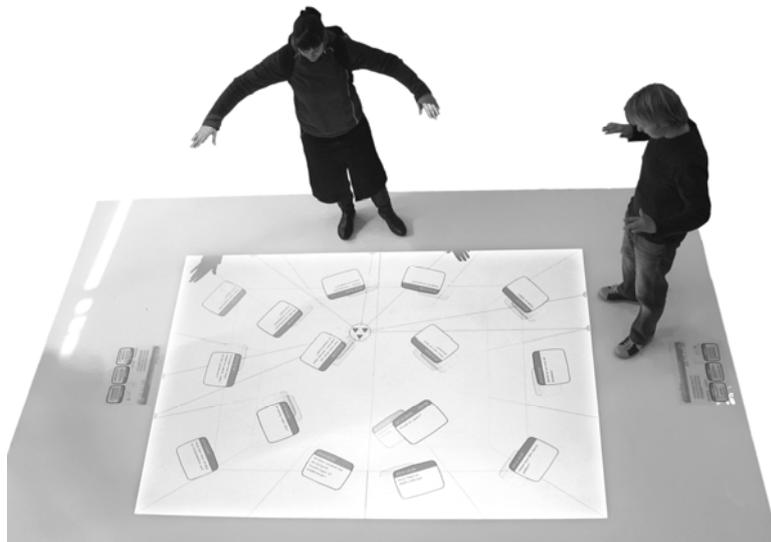
As another focus the librarians are also very aware that the concept of knowledge is changing or rather expanding. From knowledge in books to information from on-line services, most libraries today offer access to a range of media. As the perspective on knowledge continuously develops, there is a new focus on knowledge as it is also found in or between people, and the question is then; how is the library going to convey and facilitate the appropriation of that kind of knowledge. Somehow the library wants to facilitate a wider range of learning and hands-on experience with knowledge than it has traditionally done.

### **2.1 Design process**

The process of getting to the designed solution started, as all our work at Interactive Spaces [6], with a high degree of user focus and user involvement. There has been written an extensive amount of research lately on the issue of how libraries are used, so we had a good starting point for understanding the needs and structures of use of

the library. As designers we also recognise the need to get personal, first-hand experiences with users and the context of use. We therefore made what we called a *Dream Day* at the library. This process was in some ways similar to the Future Workshop method [7], but since we wanted to approach library users in the public space of the library, we made it into a public stand or event, where library users could tell us their likes and dislikes of the library as it is today, and what they hoped it would evolve into, when the new library is built within the next years. Some users also allowed us to accompany them around the library describing and showing what they did in an ordinary library visit, and where they thought improvements could be made.

The true experts on library life were however the librarians and we had them deeply engaged in the design process, making video prototypes and conceptual proposals as means for us to better get an understanding of their understanding of the library context. As a conclusion of the user studies and brainstorms, the problem statement that evolved throughout these initial steps of the design phase made it clear that what the library needed was to become a more social place. Users lacked spaces for reading material and for being introduced to new literature and ideas, and librarians wanted to have some kind of social platform where users could share knowledge among themselves. Although these are three very different ideas they all informed us on different levels about the problems or potentials of the library, and we decided to aim for a solution aimed at the two latter ones.



**Fig. 1.** The iFloor and collaboration to control the cursor

After the initial design and brainstorms were concluded, the decision was to make an interactive floor that somehow could connect ordinary users to each other and open up the possibility for discussions, and at the same time introduce new ways of finding materials in the library. The result of this was the iFloor, which after a lot of

developmental work, was installed in the entrance area of the library, being in full use for two periods of three weeks.

## 2.2 Description of the iFloor

In order to fully explain the iFloor I will first explain the general use of the prototype, and then go over the technical setup, the physical interaction and the graphical user interface as used for interaction by reading and adding content.

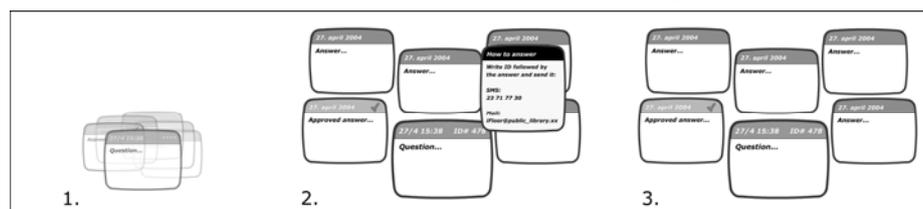
The iFloor is an interactive floor that allows users to post and read questions from other users of the library concerning whatever they may feel is relevant to post in this space. Questions and answers are posted on the floor by sending text messages by email or from a mobile phone. As 90% of all Danish households have at least one mobile phone [8], we decided that this form of interaction was acceptable for public displays. The questions and answers are browsed on the floor using a shared cursor, operated through the physical position of users.

### 2.2.1 Technical setup

Technically, the iFloor was made of two white sheets of polycarbonate plastic, a projector, a computer and a webcam. In the entrance zone of the municipal library the floor was setup with five meters to the ceiling making a projected display on the white background approximately 5 by 4 meters. The questions and answers on the floor were handled by a remote server receiving both emails and text messages and posting the 15 newest questions and 5 newest answers to each question. The positions of the participants were monitored by the webcam mounted above the floor looking straight down. Using Retina [9], a piece of software developed for visual tracking, we tracked a one meter rim around the projection analysing where there were people present on the white background. Coordinates were sent from Retina to a Macromedia Flash file and translated into attractors pulling at the shared cursor, and so the total influence of all participants pulling the cursor was calculated into a vector. In order to keep people from moving in on the projection itself and cast shadows or get in to other people's line of sight, we separate all the positions of users standing on or within the projection giving the user a visual feedback that they have lost their influence on the system.

### 2.2.2 Graphical user interface

Due to the novelty of this installation, the graphic interface for the iFloor had to be kept as clear and simple as possible. A user's influence on the shared cursor is showed by a virtual string connecting the position of the user to the cursor. If the user steps too close to the display, the string will disappear and a small dot in front of her will show the disconnection. Users will move around to drag the cursor to the ques-



tion they want

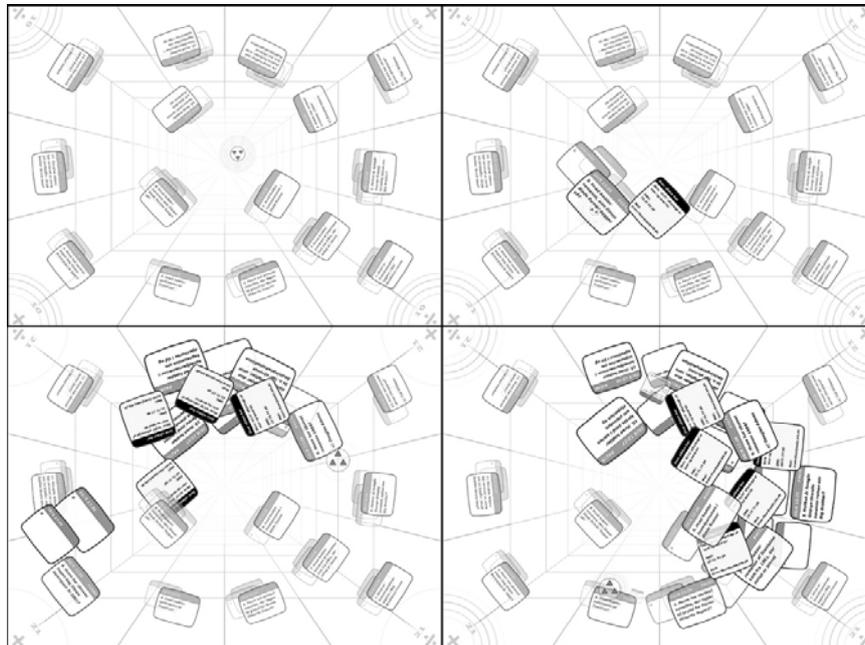
**Fig. 1.** A question and its answers unfolding.

to read, and by spreading out the arms or feet a single user can attract up to five strings and thereby get five times as much pull as a user standing straight. Stepping out of the tracked area will send the cursor floating back to the centre of the floor. If more than one person is present around the floor each will have a string attached, pulling the cursor in different directions. This makes it necessary for users to negotiate in some way where to take the cursor. This has led to many different playful interactions around the floor, which I will come back to in section 2.3.

Each question can have answers tucked in behind it and these are unfolded when the cursor is dragged over it (Fig. 1). Hitting a question with the cursor also slows down the cursor so the question will be selected for a longer time. This again gives the user a chance to write down the ID number of the question which is needed for making a reply to the post. Furthermore, tool tips were embedded in the interface explaining how to post content to the floor, including phone number and instructions.

### 2.2.3 Physical interaction

On the projected display the question and answers are distributed randomly as can be seen in (Fig. 2). As the projected display on the floor is to be viewed at any angle, the graphical elements are distributed around the centre, making the reading direction full circle. This is our first effort to activate the spatial orientation of the user, making her a participant instead of an observer.



**Fig. 2.** The distribution of questions on the floor and the questions unfolding as the cursor is dragged over them.

As the participant now moves around the iFloor the videotracking system readily tracks her, and the cursor starts moving towards her.

Moving around the floor the user will now have full control of the cursor and be able to read all the questions in her own good time. However, as it is with public space, one user is seldom alone, and as one starts to use the floor others will soon step up to observe the user and become part of the system, as they walk into the tracked area in order to read the questions. In this way we made a direct translation of the properties of the physical public space, as the use of the digital interface becomes as intrinsically shared as any other public space.

Coming back to the playful aspects of using the iFloor, this physical interaction became an object of much exploration and improvisation. In order to figure out how to control of the cursor, each participant was engaging the cursor directly, but the presence of others soon affects the cursor and takes full control away from the user. The user can then try to attract more strings from the cursor by e.g. spreading out the arms or feet, jumping up and down or snapping the fingers, of which only the first would work. This relatively unusual physical activity for a library was a big barrier to overcome for most participants, but it was one of our main points with the iFloor that we wanted to design an installation that would introduce a physical and playful form of interaction to the library, as this seemed to be a good icebreaker for achieving the goals of increased dialogue, small talk and informal knowledge sharing.

### **2.3 Observations of the interaction**

We observed the iFloor in use in the six weeks it was in the library, and discovered a range of both expected and unexpected social interactions around it. The idea of having a walk-up-and-use interface was very successful. When people stepped closer to take a look at what the iFloor was, they stepped into the tracking area as well thus becoming participants of a collaborative situation. As the next person then stepped up to the floor the collaborative situation was imposed on them as the cursor now responded to both of them at the same time. Exploring the interface in this way, half-way pushing and halfway being pulled into the social use, proved to be a good way of getting people in the public space to actually engage in collaboration. We saw several encounters of people where one user, having tried the floor for a while, was explaining it to other users as they were approaching. Understanding the dependency on other people and the need to negotiate and collaborate quickly developed into a game-like interaction where people tried to pull harder and dominate where the cursor should go and who was in control of it. This kind of co-dependency and negotiation of leadership is at the foundation of many games [10] and therefore the floor easily evolved into a playing field or game board.

However, some library users were a little hesitant or cautious when confronted with the iFloor. But as we ourselves were using the iFloor, we could attract several people and after some initial superficial explanations of what the floor was and who we were, we could retract into a role of participant observer listening to how users would deduce the workings of the floor and interact with each other and us in order to get to the content they wanted. Influencing users in this way, of courses, disturbs the

first time user's natural appropriation, but we decided it gave us better knowledge to actively engage the users in the process of discovery. Observational studies made from a distance confirmed our initial finding that if only a single user broke the boundary between observing and exploring, others would soon follow. Goffman's concept of occult [11] involvement explains this hesitation very well, as it describes the kind of involvement where a person is doing something that seems so strange that it is frowned upon by the people around him – like talking to himself. Not using the iFloor could very well be because people did not want to take the risk of looking like a fool or break some kind of rule. People did not know what to expect as both the form and the content of the iFloor was new and did not at first glance have any similarity to a known function in the library. Our participation in the interaction gave potential users assurance that it was ok to interact and a hint to how to decode the interaction.



**Fig. 3.** The quiz game. Kids battling for control of the cursor

Inspired by the floor's game-like qualities we initiated a real competition with a school class of 7th graders (age 13 to 14). The game was set up as a quiz game where the five groups were to find the answers to twelve natural science, literature and history questions and post the answers behind each question. Timestamps would help decide who had won each question and subsequently the game. We discovered that when dealing with a relatively defined group of people like a school class, the rules defined by the interaction of the floor in public space could not match the rules for interaction already established in the class. As an example the pupils were pushing at each other instead of trying to collaborate, and as all the 27 of them were standing

evenly around the floor, the entire rim of the floor was occupied and the cursor therefore pulled in all directions at once – moving it nowhere. The notion of negotiation and collaboration didn't quite sink in with the pupils. One group would stand on one side of the floor and another on the opposite side, both sides shouting at the other. Again this deadlocked the cursor in the middle. We account this to the fact that the competitive element in the game was stronger than the collaborative incitement in the floor interaction.

Funny as it may be, the above observations reflect some of the rules imposed by the floor and onto the floor in different contexts of use. All according to who is using the floor, their relationship and how many they are different rules of interaction are established. These intangible rules are difficult to address in a design but they are essential to how designs for social interaction are appropriated into a context.

### **3 Goffman's concepts for behaviour in public space as a stepping stone towards a designer's conceptual framework**

The rules that we see at work around the iFloor are what Erving Goffman calls the rules of behaviour in public places. In his book *Behaviour in Public Places – Notes on the Social Organisation of Gatherings* [1] he defines a range of concepts and rules that are defining and describing the behaviour of people in social situations. His study is of the middle class in fifties and sixties US, but many of these rules are still valid in a Scandinavian context today, and the framework for looking at these rules still holds as well. The three central concepts are the occasion, the situation and the encounter. The basic understanding of social rules according to Goffman is that they are laid out to the social gathering at these three levels. To understand what happened as we introduced the iFloor to the public library it makes a good reference to hold the case up to this basic framework, and on the basis of that discuss how we can describe the level of social interaction in a conceptual framework of social space. Designers need to be more aware of the social context they are introducing products and services into, and a conceptual framework for understanding the context and point to where a future socially interactive service is intended to function, is a tool for understanding the future impact of a design.

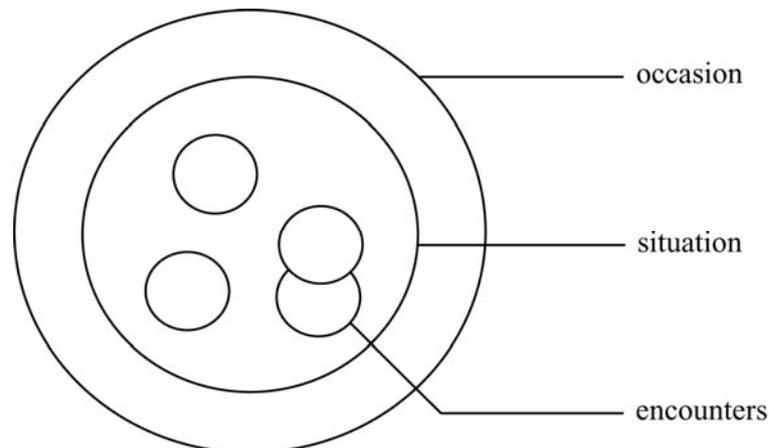
The occasion is the social construct of the event. It is what we already know or should know about conduct at a given event; say a funeral or a classic or heavy rock concert. All these situations have a prescribed frame of conduct that we learn through experiences and observations assimilated over time. Unknown occasions will first constitute a situation since there is no reference. One would have to draw on experiences from an occasion somewhat like it, but the second time one is in the situation there will be a frame of reference to guide conduct. Examples of rules defined by the occasion could be whether one sits down or stands up at the concert – this could also be evident from the physical layout of the concert space, or whether a certain type of clothes is required at the event.

The situation then is the specific manifestation of the occasion. Influencing the situation are among other things the amount of people present and the room or spatial

arrangement in which the situation takes place. A situation is “an environment of communication possibilities” [12] in which everyone entering the situation is accessible to the other participants in the situation. In the social situation communication is both expressive and linguistic and messages are conveyed through physical gestures, appearance, posture as well spoken words. Rules defined at the situational level are such as how loudly one would talk depending on the music, how one would react to being pushed or touched in a crowded room or where one would position one self in relation to others present etc.

The encounter or the face-to-face engagement is the smallest unit of social interaction. Consisting of only two or more people currently present in front of each other, focusing on a shared object, it also constitutes and delineates norms that shape the interaction. Even though a given occasion defines a very formal code of conduct, an encounter might evolve into a more informal interaction if e.g. two friends meet and talk about some very amusing shared experience. The resulting laughter might or might not be fitting with the occasion as is the case in Goffman’s example from an English wake after a funeral. Another example of encounter proprieties is the distribution of attention to the people in the present encounter. Rules defining interaction at the encounter levels can be difficult to discern from the situational, but they are focused at the interaction of those engagements or encounters that make the situation.

Of course cultural differences are numerous and therefore we are not able to define all occasions in a platonic idealistic way, as it is not possible either to universally to describe in any unambiguous way all situations or encounters. Of the three concepts especially the two latter are dynamic and dependent of the context of observation. However they are still fundamental to the understanding of Goffman’s structural understanding of social interaction as layers of rules, one containing the other (Fig. 4).



**Fig. 4.** Layers of rules defining social interaction

This introduction is to lead up to the conceptual framework giving an understanding of different forms of social interaction, and of the fact that it is the distribution of

attention in the social situation or in other words how closely people are engaged in the social situation, that defines and distinguishes one type of social interaction from another. The three levels of occasion, situation and encounter help us to understand, in an observational study, why people act as they do – from which layer the rule to interact in a certain way comes, and, in a design process, to define on which level to position a desired change in social conduct.

## **4 Conceptual Framework**

The conceptual framework of interaction in social spaces is structured along a scale of engagement, as in to what extent participants in each type of social interaction are actively engaged in the social activity, or what is the level of attention accredited to the social situation by the participants - how close are they and what do they share.

### **4.1 Distributed attention**

The first level in the conceptual framework is when people are merely present in the same space. If nothing is the apparent centre they will probably have different focuses around the space and seen as a social situation, the level of interaction will be very low. The only thing that is shared is the presence in the space, and this presence can e.g. be regulated through defining spatial elements. Also the appearance, conduct and posture of participants will be defining interaction in the setting. The social aspect of any given setting is of course only one of many, and a situation assigned to this category is not a bad social situation. The distributed attention simply means that as a social space there is not much going on. Distributed attention is seen in many contexts both in the physical realm and in the digital. Social software like intranets or many Web pages can be defined as distributed attention, as the single user never really discovers or acknowledges other users around them.

### **4.2 Shared focus**

The second level of social interaction is when the situation develops a single focus shared among its participants. This shared focus is then the organising point of reference for the entire situation and single encounters might cease as the attention of the participants are required at the situational level. The shared focus is often giving a spatial orientation of participants or vice versa - the spatial configuration of participants is emphasising a shared focus. As e.g. is the case in a room defined by a stage like a theatre. In digital designs and their interaction one of many example of shared focus is the social navigation browser developed by Höök et al[13] where users of a Web page are guided to the interesting pages by seeing where others have gone before them – to some extent as one would navigate a public urban space. Broadcast entertainment is another example of a shared focus that sometimes can be shared by millions or even billions as the world cup in football, or the live8 concerts.

### 4.3 Dialogue

At the third level participants are engaging in a shared activity in which they are investing themselves and their opinions. The dialogue requires some sort of situated engagement with the counterpart and it puts the participants in a situation where they are accessible to the counterpart's opinions. The dialogue is a more equal organisation of the participants than the shared focus with respect to power and roles, and it is of course dependant on standing on "the shoulders" of the two levels before it as a dialogue would be difficult without shared presence at some form and shared focus of a subject. Social software supporting dialogue are numerous both in research and in commercial products. From instant messaging to CSCW projects (e.g. [14] and [15]). Dialogue is concerned with separate individuals participating in encounters or situations, taking a stance towards each other and keeping focus on the social situation at hand, either exploring or debating a subject.

### 4.4 Collective action

Closely related to dialogue but with a stronger emphasis on the shared subject, the collective social activity is the socially most engaging interaction. This fourth level of the conceptual framework is concerned with the type of activity that takes place when participants are working collaboratively towards a shared goal. The activity becomes a collective activity as the goals of each participant coincide with the goals of the entire group. We recognize this in many situations where we act as part of an entity bigger than ourselves: When grown men are watching football and cheering and hugging at a goal, this form of activity would not immediately happen in many other occasions. Or the thrill of a good brainstorm when participants leave personal issues and differences aside and creatively and collectively work towards a goal. These collective experiences are often those big experiences that really stand out [16], being remembered for a long time [17] and able to establish strong bonds between people. In digital product design we do not see that many platforms for collective activities although one might argue that games like Counter Strike often exist at this level. In research projects aimed at mixing the digital and the physical contexts a good example is Citywide [18] from MRL at Nottingham University and artist group Blast Theory. Outside the idea of gaming a lot of CSCW literature holds this level of interaction as the desired ideal.

Presented in a diagrammatic form with explanatory examples the conceptual framework would look like this (Table1):

**Table 1:** Conceptual framework of social interaction

Social interaction	Examples from a work place:	Examples for a playful situation:
Collective action	Collaboration in a team of colleagues brainstorming/ working towards a solution to a design problem.	In the game it self kids will quickly loose track of time and e.g. take on new roles in the interaction
Dialogue	Discussion on e.g. how to frame a design problem or understand a specific parameter.	When kids play a large part of they efforts go into deciding what the rules are for the game and they often return to this dialogue level during play
Shared focus	Presentation. One person in front of the rest of the colleagues.	Bystanders to a game might be observing in order to join the game later or just looking at a friend playing GameBoy
Distributed attention	Awareness of colleagues before the presentation starts or in breaks during the work.	In e.g. a daycare where lots of children are playing different games to themselves or in small groups

Finally I would like to introduce the notion of mobility in social settings. Not social mobility in its ordinary sense meaning moving from one social class to another, but here it is focusing on the situation as in *situational interaction mobility*. This notion is needed in order to describe the social potential of a product or an installation like the iFloor. Basically I see three questions that can be inquired in an analysis of ideas, using this framework:

- Regarding the level of social interaction; where are we presently and where do we want to go?
- Regarding the interaction itself; how is interaction at this level supported?
- And finally regarding the openness of the system or service; to what extend is situational interaction mobility supported – that is; can users themselves take their social interaction to a different level if they choose?

The last question point towards the need to understand what I call situational interaction mobility. Situational interaction mobility describes the change in level of social interaction in the framework, and how well a service, product or installation supports this change in engagement. If the designers want to reach and maintain a certain goal with the social interaction then this needs to be tightly framed and without any great mobility, as the users should not take the situation in unanticipated directions. On the other hand if the designers wish to move the participants to a higher level of interaction then a looser framing is needed, or possibly a greater emphasis is needed on the specific direction through e.g. a focus on aesthetic interaction [19] encouraging an explorative curiosity to the users. As any context you would want to introduce a design into already has a range of interaction rules defined, a design should not only

support the specific social interaction you would want to take place, but also support the way to get there, all according to which occasion, situation and socio-cultural background the users are in and coming from.



**Fig. 5.** Conversation around the iFloor

## **5 Using the Framework - iFloor Rules**

### **Distributed attention in the library**

The library occasion is defined by on one hand a well established use of libraries where silence and attention to posture and focus on actively seeking and finding materials, are the dominating rules. This task-oriented activity has always defined libraries as very serious places for single users. Groups are silenced and conversations are strictly minimised. Library users are not maintaining a level of accessibility [20] towards the general occasion, simply because the occasion is not demanding it. Other rules defined at the occasion are that participants of the library occasion should have something to do. Of course some are searching in a more serendipitous way than others, but the number of people just hanging out is very limited. This difference from other urban public spaces was something we would like to maintain in the design of the interactive floor. Therefore we refrained from designing a café-like space where people could mingle and share knowledge, removing situational engagement

by establishing a known form of relaxation. With installing the iFloor we wanted to make a platform for social interaction that would attract attention from passer-bys, creating a situation in the library occasion which might lead to a conflict between two sets of rules governing social interaction. As the antagonist towards the well established occasion we had to design something that would be interesting enough that people would break their task-oriented endeavours and engage in interaction with the floor and eventually with other people.

### **Shared focus to the floor**

Shared focus in the library is not something that is normally pursued. If someone was to look at your search engine enquiries or watch what books you were browsing, this would be a very unusual and very out-of-place activity. Therefore the iFloor sets out a social space so different from the rules structuring the library occasion and situation that it is more like a performance or stage inhabiting the space temporarily. The shared focus on the iFloor is on the projection and the moving cursor, and also on reading the messages posted on the floor as these are animated to attract attention. This regulated the physical orientation of the participants toward a point between the users so that at any point in the collaborative interaction, users could look up and start a conversation about what they were just focusing their collaborative efforts on with the shared cursor.

### **iFloor dialogues**

Interactions on the dialogues level around the iFloor were plenty. They were, however, mostly concerned with using the cursor or trying to understand what this floor was all about. We did not observe many accounts of somebody actually getting into a conversation with another user in relation to a question posted on the floor, but still we made strangers talk to one another in a public space. Users had to negotiate in order to get to where they wanted to go if more than one user was present in the tracked area, but it happened frequently that one would tell other people to get off of the floor or someone would apologize for standing on someone else's turf. It seemed that there were three paths an encounter could take – either the collaborative where conversation would take place, the considerate bystander staying in the periphery, or the users would take it as a challenge that someone else was trying to take away their control of the cursor and start a game of tug-of-war trying to attract more strings from the cursor than the other players.

### **Collective action in public**

This kind of playful activity then becomes more like a game. But it doesn't quite make a collaborative effort reaching for a goal that is shared by all participants. Nonetheless the game-like character of the social interaction established a shared interest in the floor and if someone proposed an experiment then people would join, in a collaborative exploration of the floor. And we saw several times that when someone was sending a message to the floor everyone was watching and waiting for it to drop from cyberspace to the floor. We designed the iFloor with a built-in forced collaboration, and we were quite excited that it was possible to introduce collaboration among total strangers. Playful interaction is not supported in the library at all, apart

from some playground installations in the children's library. With the iFloor we introduced a game board for all ages and the physical interaction was an opportunity to let go of some of the rules imposed by the library occasion.

This framework did not exist when the iFloor was designed, but it is a reflection of essential concepts that we were dealing with as we designed the iFloor and as such it is the conceptual output to this research-through-design endeavour. It pins down the design discussions we had concerning the impact on the social space and social use we wished to achieve. As an outcome of the iFloor case, the framework gives us an opportunity to reflect on how we engaged the social context of the library. The four levels in the framework also indicate points of focus when designing. What kind of social interaction do we want to support, enhance or introduce into a context, and what is already present? Goffman's concepts defining three layers of rules that are shaping the social interaction can be held as a tool in a design case, where the focus is on the social space. Designers can focus on either creating a platform for social interaction by defining a whole new event or occasion with its own rules, define a new situation within the occasion where people are allowed to express themselves, or provide a tool for a new kind of encounter and in that way support a novel (social) interaction.

### **5.1 Disturbing the library occasion with an interactive floor**

A library tends to be a very task oriented place, the chances of accidental interaction and of people with shared interests simply striking up a conversation with each other are very slim. By introducing an interactive floor to a part of the library, our aim was to disturb this interaction norm and potentially shatter the boundaries that normal users would hold to each other, walking in separate bubbles, as we called it. The goal with the development of the iFloor was getting the participants to talk about subjects of shared interest when reading about them on the floor as they collaboratively were dragging the cursor around. This then is an experience of an alternative approach to a question or problem, which in turn could change how people looked at the library as a public place.

“Resisters are more likely to become aware of social gatherings as an area of life on their own” [21] as Goffman says, and in a designers context this points to the fact that an intervention into a social context with a design embedded with a range of social rules, is a way of discovering the social structure of this context. The intervention at the library was based on our findings about the social life there, but we learned much more about the environment by clashing with the standardised interaction pattern already in existence there. Reflecting on our own role as participants in the gathering-at-large in the library we could see the conflict we imposed on the situation by proposing an altogether different situation of playing and talking. Interventions in design have been a tried and reflected praxis for some time and we find this approach to developing designs both very powerful and agile at the same time, since the prototype becomes a shared artefact or boundary object [22] to reflect upon from all par-

ticipants both users and developers. Mogensen [23] has called this provotyping, as in a provocation of new knowledge about a context through the intervention, and Gaver and Dunne [24] have worked with similar approaches calling it projected realities. In both approaches the design process in itself is informing the designers about the context. In this sense the iFloor was a designer's exploration into the social fabric of the library and public space informing the research project and requiring conceptual and theoretical work to fully understand the impact and potential of the design.

## 6 Conclusion

When designing products more complex than lampposts or coffee cups i.e. products that rely on digital services or are augmented in some way by digital capabilities, designers often need to be aware of the social context that they create these things into. What impact will the designs have and what kind of social interactions is defined by the product? In order to get a better understanding of these design parameters, I have introduced a conceptual framework of social spaces. The conceptual framework is focusing on how the social interaction is structured into what in this article has been called a social space, in an attempt to view social interaction as an entity in itself and not focusing on the single user experiences of participation. According to this structure, the social space then has a distinct character which we can place into a conceptual framework, for a better understanding of a present context and for achieving a better design of a future product. The research prototype iFloor has been presented as an example of a design that is primarily focusing on the social use prior to the individual as we have worked with the user as part of a social situation defined by a set of rules and influenced by a different set of rules embedded in the design.

The conceptual framework is based on the theoretical work of Erving Goffman, and is constructed around the notion of rules defining the social space on three different levels; occasion, situation and encounter. Based on these rules the framework enables designers to predict (to some extent) the organisation of social interaction that will take place when the artefact is introduced into the real world: whether it will affect distributed attention, shared focus, dialogue or collective action. Using the conceptual framework in a design process three questions can be asked to confront design ideas. Regarding the level of social interaction; where are we today and where do we want to go? Regarding the interaction; how is interaction at this level supported? And finally regarding the openness of the system or service; to what extent is situational interaction mobility supported – that is; can users themselves take their social interaction to a different level if they choose?

The conceptual framework is a tool for designers to get a better understanding of the social context or social space of a design proposal and in a sense make the social space an active design material.

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