

# Community Bar: Designing for Awareness and Interaction

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## ABSTRACT

The Community Bar is a groupware tool supporting informal awareness and casual interaction for small communities of intimate collaborators. Its conceptual design is primarily based on a comprehensive sociological theory called the Locales Framework, with extra details supplied by other theoretical model of awareness. It is also influenced by the Microsoft SideShow system: it displays basic awareness information in a space-conservative sidebar, and reveals progressively more information through a series of transient large tooltips and pop-up windows.

## Author Keywords

CSCW, informal awareness, casual interaction.

## ACM Classification Keywords

H.5.3 [Information Interfaces and Presentation (e.g. HCI)]: Group and Organization Interfaces---Computer-supported cooperative work.

## INTRODUCTION

Kraut et al [4] showed that physical proximity is a major factor in stimulating collaboration between communities of intimate collaborators. They discovered that a large portion of the collaborators' time was spent in unplanned, casual interactions with others. These casual interactions served to keep individuals informed about each other in social and professional contexts and make the transition to tightly-coupled collaboration easier. Whittaker et al [9] found that these type of interactions are (1) unplanned, brief, and frequent, (2) amongst small groups of people familiar with one another, (3) useful for artefact-centric work and reinforcing social bonds, and (4) severely affected by physical separation. Kraut et al [4] also found that these casual interactions were based upon the members of the group having an informal awareness of each other, such as knowledge about presence, activity, and availability. Having this knowledge allows people to engage in light-weight casual interactions at appropriate times and in an appropriate manner.

Informal awareness and casual interaction tools are

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intended to help overcome the problems that physical separation causes for collaboration. These tools, designed around the above characteristics collocated interactions, provide mechanisms for maintaining informal awareness information and engaging in casual interactions between distributed group members.

Yet these tools are shallow caricatures in terms of how they support the social practices of the individuals and the groups that use them. Some tools (such as Instant Messengers) treat one's social communities as a disparate set of buddy lists, where they favour isolated chats between two people. Other tools (such as chat groups) have rigid notions of how groups are defined and how one becomes members of it. From a theoretical perspective, communities are far richer than that. Our own work is motivated by the Locales Framework [2], one of the few comprehensive theoretical group work and interaction frameworks in the computer science field, as well as the Focus and Nimbus model [5]. By combining these theories with the sidebar metaphor introduced in Microsoft's Sideshow [1] and media items of the Notification Collage [6], we are developing an awareness and casual interaction tool called the Community Bar.

We begin with a summary of both the Locales Framework and the Focus and Nimbus model. Next are specific design principles derived from these theories. Finally, we describe the design of the Community Bar tool and how it relates to these principles.

## THEORETICAL BACKGROUND

The Locales Framework is one of the few comprehensive sociological theories of group work in the field of computer science [2]. Because it is specified in a descriptive manner and at a very high level, we add details to its mutuality (awareness) aspect by referring to Rodden's Focus and Nimbus model of awareness [5].

### The Locales Framework – A Brief Overview

The *social world* - a group of people with a common purpose - is the fundamental concept used in the Locales framework. The common purpose may be formally defined, such as a company with a business model and mission statement, or informal, such as a group of friends that meet for lunch. The framework is divided into five aspects that describe how social worlds behave, as described below.

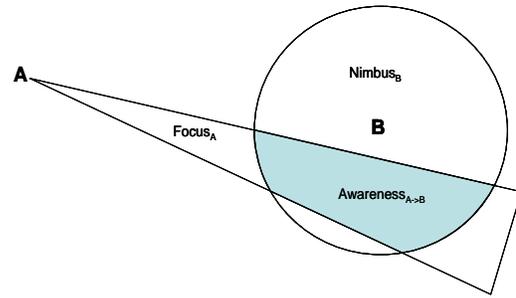
**Locale Foundations.** A *locale* is the site and means that a social world uses in its pursuit of the shared purpose. Sites are places that the social world uses, and means are the objects within those places. An example of a locale is a meeting room, where the site is the room itself and the means include whiteboards, pens, individual notebooks, chairs, tables, etc. inside the room. Another example would be a shared network file system, where the site is virtual space and the means include the “soft” electronic documents stored in the file system.

**Civic Structure.** No social world operates in isolation. Members are involved in multiple worlds at once. Social worlds exist within broader organisational structures, and sometimes smaller sub-worlds are contained within the social world. An analysis of Civic Structure describes the relevant outside influences on a social world.

**Individual Views.** As an individual engages in work, he/she is rarely involved in a single task to the exclusion of all others [2]. They will engage in multiple different tasks, across separate social worlds, simultaneously. There are two important aspects to be considered; a *view* on one social world, and an individual’s *viewset* across multiple social worlds. A view is how an individual sees a single social world (the people and the locales), and it is dependent on the level of engagement with the centre of that world. A viewset incorporates the individual’s views of all the social worlds with which they are engaged. People personalise their viewset, arranging the multiple tasks according to their current focus. They personalise their view onto a task; arranging the tools and artefacts for that task according to their current level of engagement.

**Interaction Trajectory.** Interaction Trajectories describe the highly dynamic nature of social worlds. Social worlds engage in actions towards their goals as well as the possible changes to any of the properties of the social world; members, goals, locales, structure, etc. Social worlds have phases (e.g. setup, full operation, finalising), and there are routines and rhythms [8]. They have pasts, presents, and futures. Awareness of past actions and outcomes, present situations, and visions for the future are important for creating plans and strategies.

**Mutuality.** Awareness of people, spaces and resources is vital for collaboration within the social world [2]. Fitzpatrick teases apart the definition of mutuality into provision and reception of awareness information. Members of the social world make information about themselves and their activities available to others. Others then perceive the information and become aware. The separation is important as not all provided information is always perceived. Awareness is an interaction between the provision of information by a person or object and another’s reception of that information. The focus and nimbus model of awareness [5], described next, investigates this idea in more detail.



**Figure 1: Focus and Nimbus combine to form awareness**

**Focus and Nimbus Model of Awareness**

Rodden’s [5] focus and nimbus model explicitly breaks down awareness into an interaction between the observer and the observed. Each person or artefact in the environment provides some perceivable information about itself, called *nimbus* in the model. Conversely, each person in the environment has capabilities to perceive this information. The way in which they direct this perceiving capability is called *focus*. The awareness that person<sub>A</sub> has of object<sub>B</sub> is a function of the overlap of the focus of person<sub>A</sub> with the nimbus of object<sub>B</sub> (see Figure 1).

The value of the model to the current discussion is that: (1) awareness is defined by both the observer and the observed; and (2) awareness can be conceived as a continuous function rather than binary.

**DESIGN PRINCIPLES**

The design principles outlined below are mostly restatements of the major points discussed in the theory above. Principles 1 to 3 are derived from the introductory discussion of informal awareness and casual interaction. Principles 4 to 7 are from Greenberg et al [3]’s transformation of the Locales Framework into heuristic evaluation principles for groupware. Principles 8 and 9 are from the focus and nimbus model of awareness.

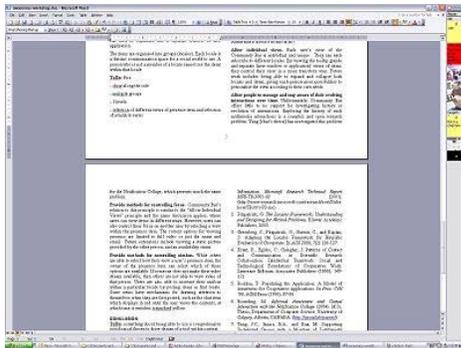
1. **Awareness information should be always visible at the periphery.** Awareness information needs to be constant and dynamic to maintain knowledge of the surrounding environment. However, it should not interfere with focus on other tasks.
2. **Allow lightweight transitions from awareness to interaction.** A primary benefit of having informal, peripheral awareness is as a basis for casual interaction. As casual interactions have to be lightweight, unplanned, and frequent, any tool that supports them must also reflect these properties.
3. **Provide rich information sources.** Awareness can be based on many different cues. The more information that is presented, the better people are able to interpret awareness information.
4. **Provide centres (locales).** The Locales Framework tells us that people work in multiple contexts simultaneously, switching between them. These multiple centres or

locales should be reflected in the design of informal awareness and interaction tools.

- 5. Provide a way to organise and relate locales to one another (civic structures).** Locales relate to each other in different ways. A representation of an individual's locales needs to allow the relationships between the locales to be expressed.
- 6. Allow individual views.** Each person interacts with a set of locales in different ways. The interface should allow the user to structure their view of the tasks according to their personal preference.
- 7. Allow people to manage and stay aware of their evolving interactions over time.** Awareness and casual interaction information is especially time sensitive and must be kept up to date. This point also refers to being aware of the past, present, and future of interactions.
- 8. Provide methods for controlling focus.** As a user's interest in their locales changes over time, they need to be able to adjust their focus onto the people and artefacts in those locales.
- 9. Provide methods for controlling nimbus.** In much the same way as a person changes their focus with their interest, their nimbi should be able to change as well. People need to be able to adjust how they appear to fit the context in which they are interacting.

## COMMUNITY BAR

Community Bar is an informal awareness and interaction tool that is based on the design principles described above. The practical aspects of the design are heavily inspired by Microsoft Sideshow's [1] sidebar and "quick drill-down into information" designs, and also by the media-items in the Notification Collage [6].



**Figure 2: Community Bar peripherally visible by its constant location at the side of the user's screen (see right side).**

As in the Sideshow application, the basic profile of Community Bar is a space-conservative bar on the side of the screen (Figure 2, right side). The bar displays small items, and like Sideshow, the items support quick drill-down into information. Placing the mouse over an item displays a "tooltip grande" [1] (Figure 3) which can then be expanded into a separate window or new application. Items are also organised into groups (locales), where each locale is a distinct communication space for a social world to use.

A person who is not a member of a locale cannot see the items within that locale.

Details of Community Bar are further elaborated below with respect to the design guidelines described previously.

**Awareness information should be always peripherally visible.** Community Bar is displayed as a thin bar on the side of the workspace (Figure 2). The bar reserves the space on the screen and can never be covered. The bar's awareness information is always visible but only taking a small amount of space on the screen so that it doesn't interfere with the user's main task. Awareness is provided within the user's peripheral vision of their workspace.

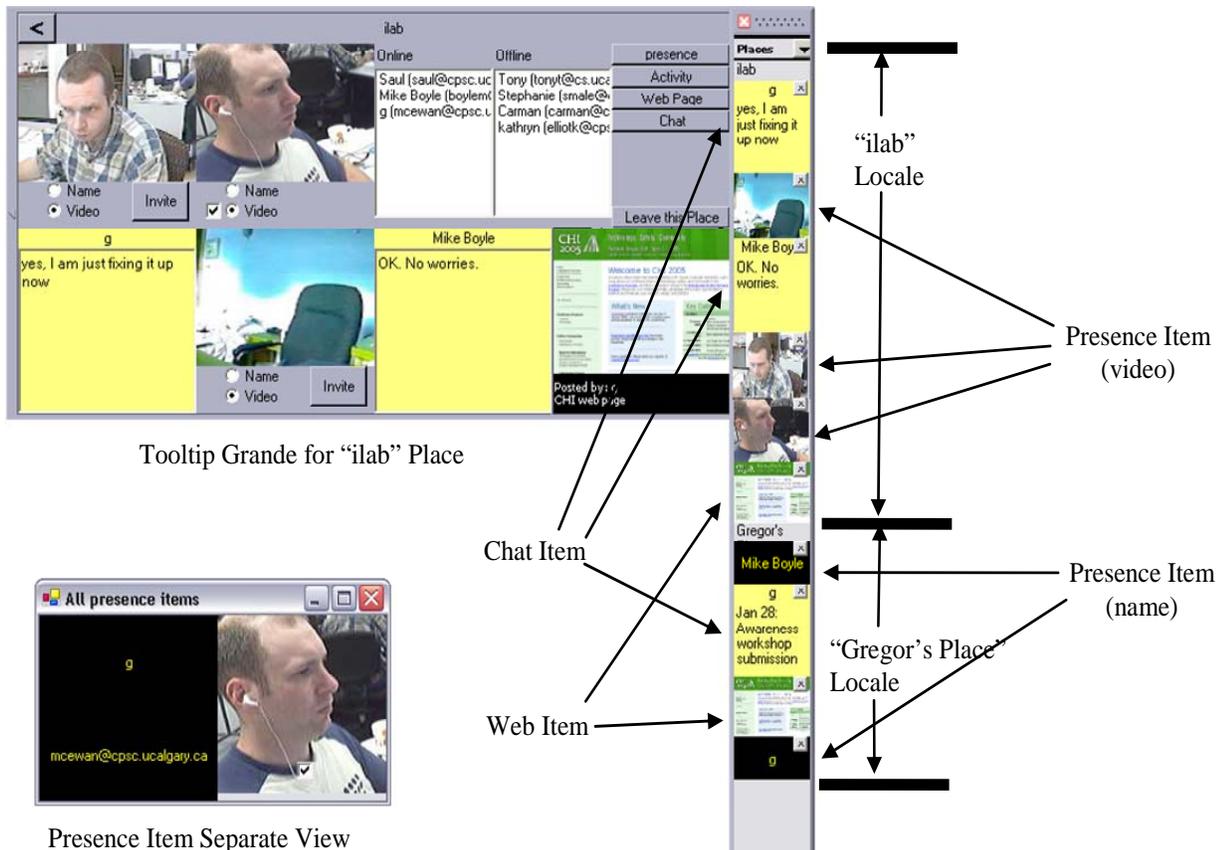
**Allow lightweight transitions from awareness to interaction.** When the user moves their mouse over the awareness elements on the bar, they display a "tooltip grande" (see [1]). The tooltip grande view, as well as showing more information detail than the smaller item in the bar, provides methods of interaction (Figure 3 shows an example). When appropriate, the tooltip grande can be expanded further into a separate window view or by launching a new application. For example, the video item progressively expands to one with higher resolution and a faster frame rate. Similarly, a Postit item expands to one that is larger font and editable. The web page item shows a small thumbnail in the bar, a larger thumbnail as well as comments from the poster in the tooltip grande, and launches the page in a web browser when explored further.

**Provide rich information sources.** In the current version, users can optionally display full video feeds of themselves, send text messages, post sign-up lists for events, and post web links. We encourage other media items, and even supply an API for programmers to create these new items. Planned items include: file transfer, currently playing music display, picture slide show, and availability (online, away, busy, etc.).

**Provide centres (locales).** Community Bar supports concurrent display of multiple locales (see Figure 3). The locales are listed vertically in the bar. All the items within a locale are shown under its heading. Each person will see only the items from locales in which they are subscribed.

**Provide a way to organise and relate locales to one another (civic structures).** The current prototype does not implement any way for the user to structure their locales, except to show or hide them on the bar. Future work includes investigating what kind of relationships are useful in an informal awareness and casual interaction tool, and what types of visualisation and interaction are most useful.

**Allow individual views.** Each user's view of the Community Bar is individual and unique. They can each subscribe to different locales. They control their own view of particular items by selectively raising the transient tooltip grande or the full window. Future work includes being able to expand and collapse both locales and items, giving each



**Figure 3: Community Bar. The "ilab" place Tooltip Grande displays the Tooltip Grande view for all of the items in that place.**

person more possibilities to personalise the view according to their own needs.

**Allow people to manage and stay aware of their evolving interactions over time.** Community Bar does not yet allow support for people to investigate their history or evolution of interactions. Exploring the history of such multimedia interactions is a complex and open research problem, although we started investigating this in the Notification Collage predecessor to the CB [7].

**Provide methods for controlling focus.** Community Bar's relation to this principle is similar to the "Allow Individual Views" principle and the same discussion applies. In essence, each media type offers several different nimbuses (the sidebar, the tooltip grande, and the popup window), and people can control their focus by viewing these items in different ways. We are also working on different ways for people to control their focus on a media item by changing its representation. For example, the video item has the option of switching from the full video representation to just the name and email; other planned representations include availability status and a static picture of the person.

**Provide methods for controlling nimbus.** While others are able to select how they view a user's presence item, the owner of the presence item can select which of those options are available. If someone does not make their video

stream available, then others are not able to view video of that person. Users are also able to increase their nimbus within a particular locale by posting items in that locale. Some items also include mechanisms for drawing attention to themselves when they are first posted, such as the chat item which displays in red until the user views the contents, at which time it switches to standard yellow.

## CONCLUSION

Community Bar is an informal awareness and casual interaction system that has been designed from a comprehensive sociological theory. The theory has been used to make sure that the tool not only directly supports its function of awareness and interaction, but also integrates into the overall work practices of the user.

## ACKNOWLEDGMENTS

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