

# Interaction Patterns in Cell phones

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## Approval Sheet

This is to certify that Special Project titled  
“Interaction Patterns in Cell Phones” by Deepak Saini is  
approved  
for the partial fulfillment of the requirement  
for the degree of ‘Master of Design’

Project Guide: .....

Chair Person: .....

Internal Examiner:.....

External Examiner: .....



## Acknowledgement

I sincerely thank my guide Prof. Anirudha Joshi for all the help and support. It was an opportunity to peep into a new dimension of Interaction Design.

This project was helpful for orienting me for my final project also. I am also thankful to all my batch mates and juniors.



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### **Patterns..**

#### **How can a user comfortably navigate through the Cell phone?**

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## Introduction

Projects on interaction patterns by my batch mates Ram Brijesh, Siddharth Patil and myself are in continuum. All the three projects uses the same basis and almost the same references, but caters to the different domains. The projects are in sequence where initial introduction of the concept of Patterns has been covered by Brijesh and patterns in Product Design by Siddharth.

My project “Interaction Patterns in Cell phones” deals with organizing and identifying the interaction patterns in Cell phones.

The basis of the project has been taken from the book “A Pattern Language” by Christopher Alexander and Jenifer Tidwell’s proposal of Patterns in Interaction Design.  
I have based my study and analysis majorly on Tidwell’s work.



## Introduction

A pattern as defined by Christopher is-

“Each pattern describes a problem which occurs over and over again in our environment, and then describes a core of solution to that problem, in such a way that you can use this solution a million times over, without ever doing it the same way twice.”

- Christopher Alexander

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## Need of the Pattern (language)

At one level, this language is a way to describe existing artifacts. Using it as such is fairly simple: read through the language, and pick out the patterns that you see. The problem statements and forces in the pattern descriptions may help you understand how the artifact does what it does, and what tradeoffs its designer may have been considering.

**At a much deeper level, one can use this language as a tool to help you design an artifact.**

**The patterns may also be used to help design the conceptual model behind the interface**

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## Approach

I have tried to identify the Interaction Patterns in Cell phones based on the guidelines laid by Jenifer Tidwell.

Some basic groups have been made as “Pattern Descriptions” that essentially defines a broader group of patterns, it then contains patterns that are more direct and precise.

Various combination of these broader and direct patterns can be assembled to develop Sub-language to attend to a problem.

The patterns are essentially prescriptive as the idea here is to use it as a Design tool and evaluation criterion.



## Approach

I have identified some broader groups and detailed some of the direct or low level Patterns as my project and contribution to the field.

The structure used to define my patterns is same as that of Tidwell.

Typically a patterns starts with some **Examples** that gives an idea about the problem then is has a **Context** that sets the context for the pattern. It defines the situation under which the pattern can be effectively observed.

Next comes the **Problem** statement. This defines the problem in a sentence or two.

Then comes **Forces** that defines the various factors that responsible for decision making.

Finally **Solution** takes about the suggestion or a guideline to solve the problem.

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## Pattern Descriptions (broader groups)

### How can a user comfortably navigate through the Cell phone?

- Externalizing the structure
- Clear entry points
- Go back one step
- Go to a safe place

### How can a user customize?

- Customization features like “My Shortcuts”

### How can the interface actively support the user?

- Good defaults
- Progress indicator

### How should the content unfold to a user?

- Navigable spaces
- Overview beside the detailed view



## Patterns..

### How can a user comfortably navigate through the Cell phone?

#### I. Externalizing the structure

##### Examples:

- Windows explorer
- Sony jog dial cell phone

**Context:** The unfamiliarity and lacks confidence demotivates novices to use cell phones. The menu structures are actually related to each other in a defined order and this structure if revealed to the users (specially novices) can make them comfortable and familiar to the system.

**Problem:** How to quickly communicate the conceptual model of arrangement of menus and submenus and thus encouraging user to navigate and explore the system without feeling trapped or lost with in the constraints of cell phone (screen and navigation options).

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## Patterns..

### How can a user comfortably navigate through the Cell phone?

#### I. Externalizing the structure

##### Forces:

- User (novice) wants to know his current location.
- User (novice) wants to know where to go next.
- Sense of being lost makes novices uncomfortable and nervous..

**Solutions:** Externalize the structure behind the menus and submenus and use the structure like a map of navigation relevant to the artifact.

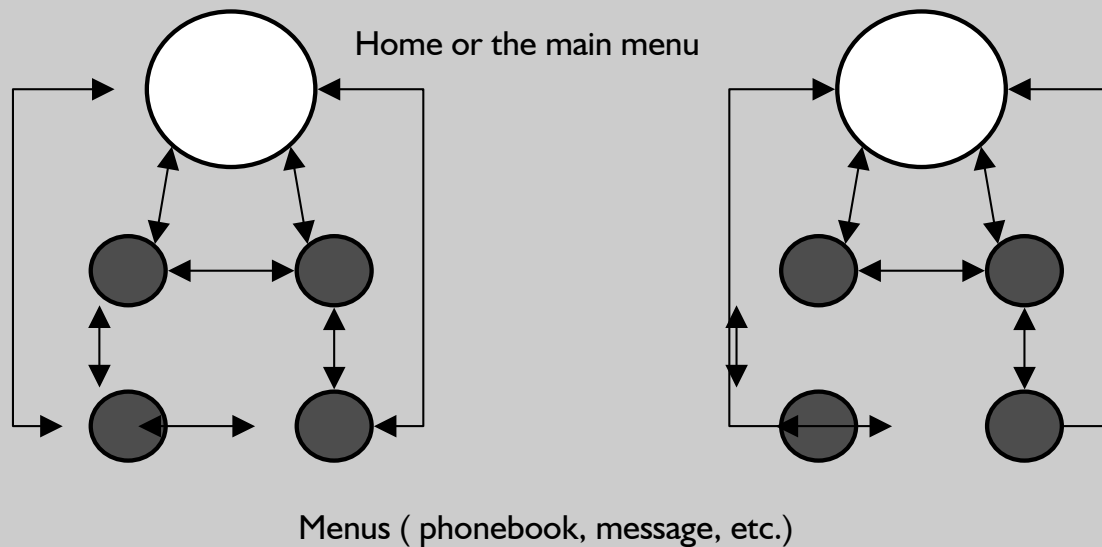
A clear structure helps users to build up correct conceptual models (model that designer wants users to build).



## Patterns..

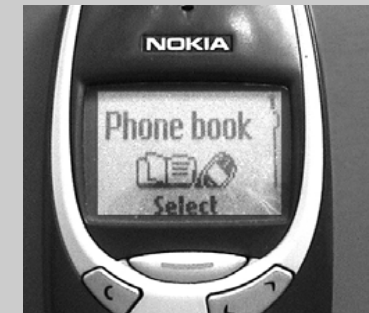
How can a user comfortably navigate through the Cell phone?

### I. Externalizing the structure



Navigation structure of Nokia 3100

Navigation structure of Sony jog dial



The structure in jog dial has been made more externalized thus the it becomes easy for users to build a conceptual model

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## Patterns..

How can a user comfortably navigate through the Cell phone?

### 2. Clear Entry Points

#### Examples:

- Cell phone main screen that has the soft keys (menu, names ) as the entry points.
- Portals or home pages on the WWW
- A book's index, introduction, and table of contents
- Entrances to buildings

**Context:** The artifact is organized as a set of Navigable Spaces. Clear entry points are the clues for the effective navigation of these spaces.

**Problem:** How does the user know where to start?



## Patterns..

How can a user comfortably navigate through the Cell phone?

### 2. Clear Entry Points

#### Forces:

- A novice should find some clue from where to start.
- Unclear entry points might leave the user confused and discouraged.

**Solution:** Provide a small set of well-defined, Clear entry points.



## Patterns..

How can a user comfortably navigate through the Cell phone?

3. Go back one step

### Examples:

- The “Cancel” or “ Back” button in Cell phones.
- The "Back" button on a Web browser
- Turning back a page in a physical book or magazine
- The "Undo" feature on some computer applications

**Context:** The interface allows a user to move through menus and sub menus.

**Problem:** How can the artifact make navigation easy, convenient, and psychologically safe for the user?



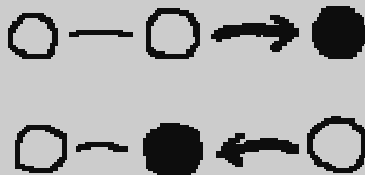
## Patterns..

### How can a user comfortably navigate through the Cell phone?

#### 3. Go back one step

#### Forces:

- Users tend to explore a navigable artifact in a tree-like fashion, going down paths that look interesting, then back up out of them, then down another path.
- The user may want to temporarily look back at the previous space or state they were in.
- If the user gets into a space or a state that they don't want to be in, they will want to get out of it in a safe and predictable way.
- The user is more likely to explore an artifact if they are assured that they can easily get out of an undesired state or space; that assurance engenders a feeling of security



**Solution:** Provide a way to step backwards to the previous space or state. Allow them to backtrack as far as they want.



## Patterns..

How can a user comfortably navigate through the Cell phone?

### 4. Go Back to a Safe Place

#### Examples:

- The "Cancel" button in Cell phones.
- The "Home" button on a Web browser
- Turning back to the beginning of a chapter in a physical book or magazine
- The "Revert" feature on some computer applications

**Context:** The interface allows a user to move through spaces in Navigable Spaces in a linear fashion and that may leave the novice completely lost.

**Problem:** How can the artifact make navigation easy, convenient, and psychologically safe for the user?



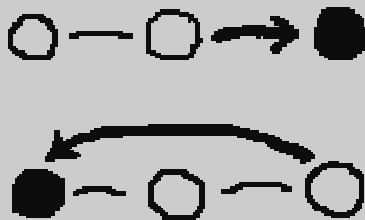
## Patterns..

How can a user comfortably navigate through the Cell phone?

### 4. Go Back to a Safe Place

#### Forces:

- If the user gets into a space or a state that they don't want to be in, they will want to get out of it in a safe and predictable way.
- The user is more likely to explore an artifact if they are assured that they can easily get out of an undesired state or space; that assurance engenders a feeling of security.
- Backtracking out of a long navigation path can be very tedious.



**Solution:** Provide a way to go back to safe place immediately that leads the user to the main screen.

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## Patterns..

### How can a user customize?

#### 1. Customization features like “My Shortcuts”

##### Examples:

- Making of shortcut in windows
- Shortcut feature in Cell phones

**Context:** In a cell phone the actual work surfaces appear at the bottom of the hierarchy for eg. In Nokia 3310 the actual writing of a message happens at write message menu which itself comes under message menu and message menu can be accessed from the home menu or the main screen.

These work surfaces that are often used by the user can be directly accessed by creating the shortcuts, instead of browsing and selecting.

**Problem:** How to enable the user to quickly access the work surfaces that he uses often more than the others.



## Patterns..

### How can a user customize?

#### I. Customization features like “My Shortcuts”

##### **Forces:**

- There is a substantial difference in menu and sub menu structures of two models of the same brand and off-course from one brand to other and thus change of brand or model creates problem.
- The experts and advanced beginners want to do their work in their own way, that suits their needs.

**Solution: Give the options to customize the shortcuts to the work surfaces .**



## Patterns..

### How can the interface actively support the user?

#### I. Good defaults

##### Examples:

“General profile” is the default profile in cell phones.

- The volume control, keypad tones, call divert options, language setting, network selection etc. all have default settings that allows maximum number of users to use a cell phone comfortably especially the novice as they are not in a position to customize the settings.
- The retention of the recently dialed numbers as Call list and last typed message.
- A PC login screen with the last user's name still in the "User name:" field
- A phone menu which, if you don't press any number, puts you through to a human operator who can help you
- Refrigerator controls which give you a "medium coldness" setting by default

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## Patterns..

### How can the interface actively support the user?

#### I. Good defaults

**Context:** Some of the data fields can be given reasonably generalized default values.

**Problem:** How to encourage the novices using cell phone by lining up minimum settings to be made by them.

**Forces:**

- The user (novices) may have no clue what kind of value to supply, from the given context.
- The user may be perfectly happy with the default behavior or values, with no desire to change it; but they may want to know what the default values are.

**Solution:** Supply reasonable default values for the fields in question. Show these defaults to the user but indicate clearly that the value can be changed by the user, if they so desire.



## Patterns..

### How should the content unfold to a user?

#### I. Navigable spaces

##### Examples:

- The WWW and other hypertext systems
- Museum exhibit in a set of physical rooms
- Cell phone menus

**Context:** The artifact contains a large amount of content -- too much to be reasonably presented in a single view. This content can be organized into distinct conceptual spaces or working surfaces which are semantically linked to each other, so that it is natural and meaningful to go from one to another.

**Problem:** How can you present the content so that a user can explore it at their own pace, in a way which is comprehensible and engaging to the user?

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## Patterns..

### How should the content unfold to a user?

#### I. Navigable spaces

##### Forces:

- The screen size of a cell phone is quite small compared to the amount of information.
- The user wants to know where they can (or should) go next, and how it's related to where they are now.
- The user wants to be able to choose where to go next.
- The user (novice) doesn't want to get lost.

**Solution: Create the illusion that the working surfaces are spaces, or places the user can "go" into and out of.**



## Patterns..

### How should the content unfold to a user?

#### 2. Overview beside the detailed view

##### Examples:

- IMac fish eye navigation
- Sony jog dial

**Context:** Cell phone has the limitations of limited screen area and relatively large amount of data (menu structures) to be displayed and it becomes impotent to the detailed view of a selected thing along with the overall structure.

**Problem:** How to give the details of a selected menu along with the idea of its connections with the other menus of the structure.



## Patterns..

### How should the content unfold to a user?

#### 2. Overview beside the detailed view

##### Forces:

- The overall structure of the menu gives a fair idea of menu organization and thus helps user to understand the conceptual model well.
- Detailed view is necessary to do the necessary operation.

**Solution:** Provide a feature (eq.fish eye) in which the selected part gets highlighted showing the detailed view



## References:

- Alexander, Christopher. *The Timeless Way of Building*. New York: Oxford University Press, 1979
- A Pattern Language for Human-Computer Interface Design *Jenifer Tidwell*  
[http://www.mit.edu/~jtidwell/interaction\\_patterns.html](http://www.mit.edu/~jtidwell/interaction_patterns.html)

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