Postures & Patterns

Jörg Cassens

Contextual Design of Interactive Systems



1 Desktop

Xerox Star (1981)

- Schreibtisch-Metapher: vertrautes konzeptuelles Modell
- Icons: erkennen und zeigen statt erinnern und tippen
- Direkte Manipulation (Shneiderman 1983)
- WYSIWYG: what you see is what you get \rightarrow PageMaker (DTP)
- Engelbarts Mouse als Zeigeinstrument
- endgültige Trennung von Applikation und Interface
- Folge für Nutzer:
 - Computer zugänglicher für Nichtprogrammierer
 - Nutzer wollen immer komplexere Dinge tun
 - Selten überblickt die Nutzer alle Möglichkeiten
- Erstes System, bei dem Usability Engineering eingesetzt wird:
 - aufwendige Nutzungsanalyse und Paper Prototyping
 - Nutzertests mit potentiellen Benutzern
 - iterative Verfeinerung des Interfaces

Xerox Star Interface

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Xerox Star Interface (1981)

Xerox Star (contd.)

- Kommerzieller Flop:
 - USD 15.000
 - beschränkte Funktionalität, z.B. keine Tabellenkalkulation
 - geschlossene Architektur: andere Firmen können keine Anwendungen dafür anbieten



Apple Lisa (1983)

- basiert auf den Star Interface
- etwas billiger (USD 10.000), aber auch kommerzieller Flop



☞ www.obsoletecomputermuseum.org

Apple Macintosh (1984)

- Preis: USD 2.500
- Ideen ausgereift, Markt bereit
- ermutigt andere Anbieter, Software dafür anzubieten
- Interface Richtlinien ermöglichen Konsistenz zwischen verschiedenen Anwendungen
- exzellente Graphik und erschwinglicher Laserdrucker ermöglichen Desktop Publishing



[🖙] www.at-mix.de

Posture

- Two primary types of desktop interfaces: sovereign and transient
- majority of actual work that gets done on desktop applications is done in sovereign applications
- Transients exist in supporting roles for brief, intermittent, or largely background tasks

Primary and secondary windows

- The primary window contains your application's content, typically expressed in the form of documents that can be created, edited, and shared
 - Primary windows often are divided into panes that contain content, a means of navigating between different content objects, and sets of frequently used functions for manipulating or controlling the content
 - Primary windows typically are designed to assume sovereign posture, filling most of the screen and supporting full- screen modes
- Secondary windows support the primary window, providing access to less frequently used properties and functions, typically in the form of dialogs
 - If your application allows panes located in the primary window to be detached and manipulated separately, these floating panels or palettes also take on a role as secondary windows

Primary window structure

- Menus and toolbars are collections of related actions the user can instruct the application to perform, such as "close this document" or "invert the colors of the current selection."
- **Content panes** form the primary work area within most desktop applications, whether it is the editable view of a form or document or (as in the case of a software music synthesizer, for example) a complex control panel
- **Index panes** provide navigation and access to documents or objects that ultimately appear in the content view(s) for editing or configuration
- **Tool palettes** allow the user to rapidly switch between the application's modes of operation by selecting one tool from a set of tools
- **Sidebars** most often allow object or document properties to be manipulated without the need to resort to modal or modeless dialogs
- Question: What are ribbons?

Windows on the Desktop

- Overlapping windows
- Tiled windows
- Virtual desktop spaces
- Full-screen applications
- Multipaned applications

Multipaned

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Window states

- Minimized windows get collapsed into icons on the desktop or into the taskbar (Windows) or the Dock (OS X)
- Maximized windows fill the entire screen, covering whatever is beneath them
- The pluralized state is that in-between condition where the window is neither an icon nor maximized to cover the entire screen

MDI vs SDI

- Multiple document interface, or MDI.
 - multiple windows reside under a single parent window.
- Tabbed document interface, or TDI
 - allows multiple documents or panels to be contained within a single window.
- Single document interface, or SDI.
 - all windows are independent of each other.

Unnecessary rooms

• Secondary windows containing functions that should really be integrated into panes or other surfaces within the primary window.





(Cooper et al., 2014)

Necessary rooms

- When users perform a function outside their normal sequence of events, it's usually desirable to provide a special place in which to perform it.
- For example, purging a database is not a normal activity.
 - It involves setting up and using features and facilities that are not part of the normal operation of the database application

Menu

- Drop-down, pop-up
- Toolbars and direct-manipulation idioms can be too inscrutable for a first-time user to understand, but the textual nature of the menus explains the functions
- For an infrequent user who is somewhat familiar with an application, the menu's main task is as an index to known tools: a place to look when he knows there is a function but he can't remember where it is or what it's called.
- For a frequent user, menus provide a stable physical location at which to access one of hundreds of possible commands, or a quick reminder about keyboard shortcuts.

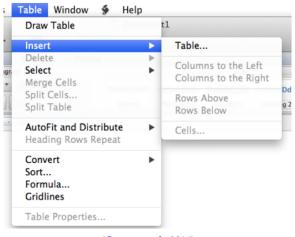
Menus II

- Disabled menu items
- Check mark menu items
- Icons on menus

Accelerators and Mnemonics

- Accelerators or keyboard shortcuts provide an easy way to invoke functions from the keyboard.
 - These are commonly function keys (such as F9) or combinations involving modifier keys (Ctrl, Alt, Option, and Command).
- Access keys or mnemonics are another Windows standard (they are also seen in some UNIX GUIs) for adding keystroke commands in parallel to the direct manipulation of menus and dialogs
 - Mnemonics are accessed using the Alt key, arrow keys, and the underlined letter in a menu item or title.

Cascading Menus



(Cooper et al., 2014)

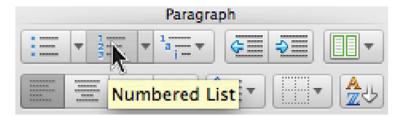
Toolbars, **Palettes**, and **Sidebars**



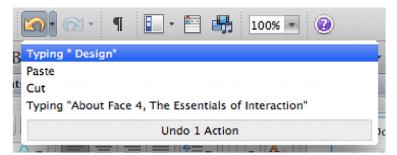


Toolbars and menus

- Toolbars work together with menus to satisfy user needs as they mature
- Whereas menus are complete toolsets with the main purpose of teaching inexperienced users and organizing seldom-used advanced functions, toolbars are for frequently used commands and cater to perpetual intermediates
- They complement each other perfectly, addressing different user needs at different times
- Toolbars are modeless, but they don't introduce the conundrums that modeless dialogs do
- Toolbar button, or icon button
- ToolTips



(Cooper et al., 2014)



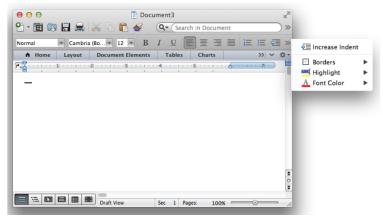
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Movable and Overflow toolbars

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Movable and Overflow toolbars



(Cooper et al., 2014)

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(Cooper et al., 2014)

Docked Palettes



(Cooper et al., 2014)

Sidebars, task panes, and drawers

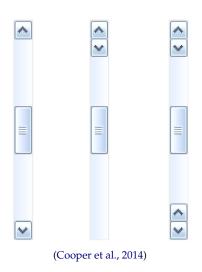


(Cooper et al., 2014)

Pointing

- The mouse is a "relative" pointing device:
- Tablets and slates are usually "absolute" pointing devices
- Touchscreens on Laptops/Desktops?

Scrollbars



Mouse buttons and controls

- In general, the left mouse button is used for all the primary direct-manipulation functions, such as triggering controls, making selections, drawing, and so on
- The right mouse button enables direct access to properties and other context-specific actions on objects and functions via the ubiquitous context menu
- Rolling the wheel forward scrolls the window up, and rolling it backwards scrolls the window down, Pressing it acts like a third mouse button
- Using modifier keys in conjunction with the mouse can extend direct-manipulation idioms
- Metakeys include Ctrl, Alt, Command (on Apple computers), and Shift

Point & Click

- Clicking and dragging
 - selecting, reshaping, repositioning, drawing, and dragging and dropping
- Double-clicking
 - Double-clicking means single-clicking plus action
- Chord-clicking

- ???

- Double-clicking and dragging
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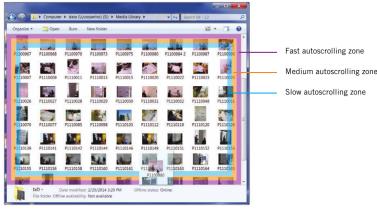
Selection

- Command ordering and selection
- Verb-object ordering is consistent with how commands are formed in English
 - "rm file" in Unix
 - Problem: termination
- With an object-verb command order, we don't need to worry about termination
 - Select object, do something

Drag and drop

- drag-and-drop operation: clicking and holding the button while moving an object across the screen and releasing it in a meaningful location
- Surprisingly, drag and drop isn't used as widely as we'd like to think, and it certainly hasn't lived up to its full potential.
- Drop candidates must visually indicate their receptivity.
- The drag cursor must visually identify the source object.

Autoscoll



(Cooper et al., 2014)

2D object manipulation

- Repositioning
 - demands the click-and-drag action, making it unavailable for other purposes
- Resizing and reshaping
 - resize handles
- Connecting
 - clicks and drags from one object to another

2D object manipulation

- Display issues and idioms
 - Multiple viewpoints
 - Baseline grids, depthcueing, shadows, and poles
 - Wireframes and bounding boxes
- Drag thresholds
- The picking problem
- Object rotation, camera movement, rotation, and zoom

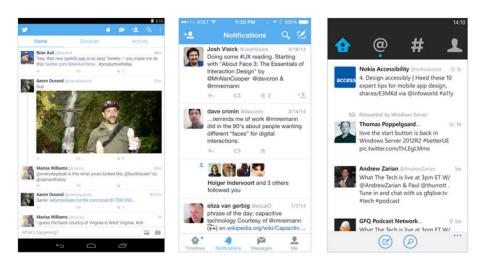
2 Handheld

Anatomy of a Mobile App

- While the posture of desktop applications is most often sovereign, mobile apps, by contrast, are by their very nature transient
- context-driven nature of the majority of mobile apps (games perhaps being the exception, but the interaction design of games in general is a unique topic in itself) dictates a transient stance, especially on handheld mobile devices
- The fact that these transient apps take up their host device's entire screen makes them no less transient

2.1 Mobile

Stacks



(Cooper et al., 2014)

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(Cooper et al., 2014)

Orientation and layout





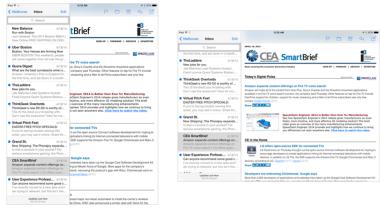
(Cooper et al., 2014)

2.2 Tablet

Tablet format apps

- Tablet format apps have considerably more breathing room than handheld-format apps as far as screen real estate is concerned
- The iPad's 4:3 aspect ratio and large screen size ensures plenty of room for navigational and functional controls, but Windows and Android tablets also manage quite serviceably with the movie-like 16:9 aspect ratios

Stacks and index panes



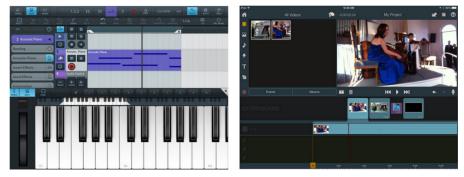
(Cooper et al., 2014)

Pop-up control panels



(Cooper et al., 2014)

Mobile versus desktop-like layout



(Cooper et al., 2014)

Hardware-like control layout



(Cooper et al., 2014)

2.3 Mini-tablet

Mini-tablet format apps

- Adjacent panes
 - Generally not a good idea on full-sized tablets in portrait orientation, adjacent panes are usually far too cramped to consider on mini-tablets
 - In landscape, at most two adjacent panes can be supported
- Tool bars
 - In portrait view, these can feel distant from the action due to the tall, narrow form factor and increased screen size over handhelds
 - In landscape orientation, tool bars stacked with navigation bars leave little vertical space for content
- Lists
 - Single-column lists tend to look out of proportion on mini-tablets, even in portrait
 - Grid, swimlane, and card approaches tend to work better
- Pop-up versus full-screen dialogs
 - Mini-tablets are big enough that using phone-style full-screen idioms for menus and dialogs won't work; these should be implemented as pop-up dialogs

2.4 Navigation, Content, Control

Lists



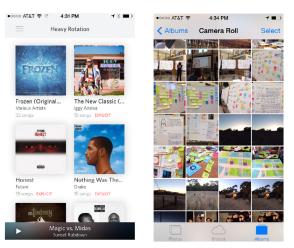
(Cooper et al., 2014)

Grids



(Cooper et al., 2014)

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(Cooper et al., 2014)

Content carousels



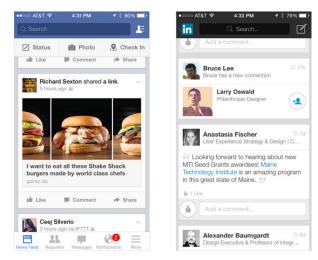
(Cooper et al., 2014)

Swimlanes



(Cooper et al., 2014)

Cards



(Cooper et al., 2014)

Cards

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Tab Bars



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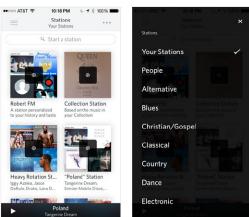
Tab Bars



(Cooper et al., 2014)

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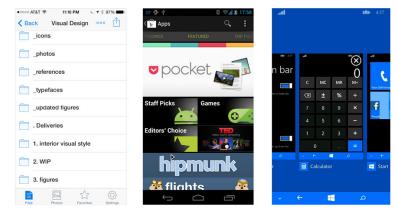


Tab Carousel



(Cooper et al., 2014)

Nav Bars & Action Bars



(Cooper et al., 2014)

Vertical tool bars and palettes



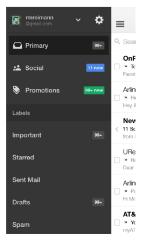
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Tool carousels



(Cooper et al., 2014)

Drawers

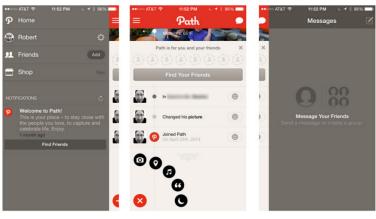


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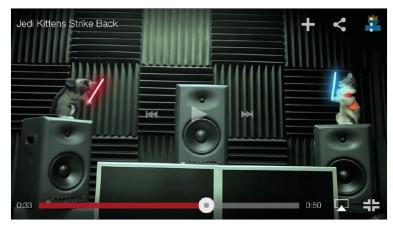


Drawers



(Cooper et al., 2014)

Tap-to-reveal



(Cooper et al., 2014)

Direct Manipulation



(Cooper et al., 2014)

References

Literatur

Cooper, A., Reimann, R., Cronin, D., and Noessel, C. (2014). *About Face (fourth edition): the essentials of interaction design*. John Wiley & Sons.