

COMS W4170

Case Study: Marking Menus 2

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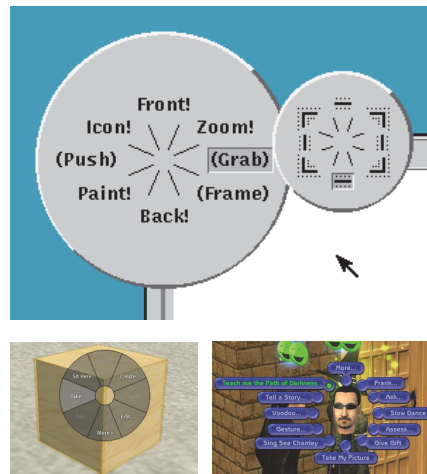
1

Pie Menu vs. Linear Menu

D. Hopkins, The Design and Implementation of Pie Menus, *Dr. Dobb's Journal*, Dec 1991

<http://www.drdobbs.com/database/the-design-and-implementation-of-pie-men/184408667?queryText=pie%2Bmenus>

- Advantages
 - Reduced seek time
 - Faster to select angle than distance
 - Fixed distance to travel
 - Increased target size
 - "Mouse-ahead" possible before drawing menu
- Disadvantages
 - Large footprint
 - Angles vary with # items
 - Loses scale invariance with hierarchy
- Examples
 - The Sims, Second Life (original viewer), OLPC Sugar...



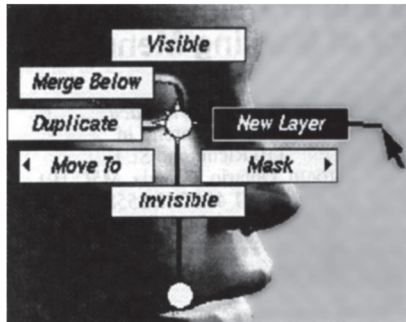
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Marking Menus G. Kurtenbach 93

<http://www.youtube.com/watch?v=dtH9GdFSQaw>

(Used in Autodesk Maya, Inventor,...)

- Much like pie menu if user holds mouse still after pressing (i.e., menu appears)
- When user moves immediately after pressing, only an "ink trail" is shown
- Back up by touching parent menu center
- Menu selection → Gestural interaction
- Scale invariance retained with hierarchy



M. Tapia and G. Kurtenbach 95

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Marking Menu Refinements

M. Tapia and G. Kurtenbach, *Some Design Refinements and Principles on the Appearance and Behavior of Marking Menus*, Proc. UIST '95, 189–195. <https://doi.org/10.1145/215585.215973>

Principle

Maintain visual context

Hide unnecessary information

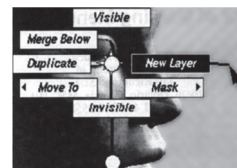
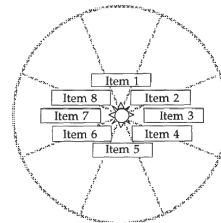
Support skill development using graphical feedback

Refinement

- Display only the labels
- Violate pie wedges
- Make labels symmetric

- Hide parent menus (Show only centers)

- Use eight item menus
- Use compass star around menu center
- Show idealized marks



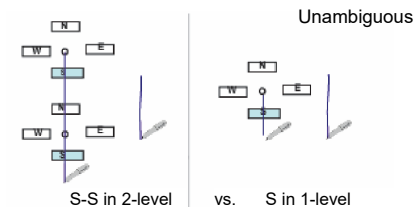
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Simple vs. Compound Mark Hierarchical Marking Menus

S. Zhao & R. Balakrishnan, *Proc. UIST* 2004, 33–42. <https://doi.org/10.1145/1029632.1029639>

- Problem: Scale invariance means certain mark combinations for hierarchical menus are ambiguous in regular (“compound”) marking menus

- Many leaves must be left unassigned



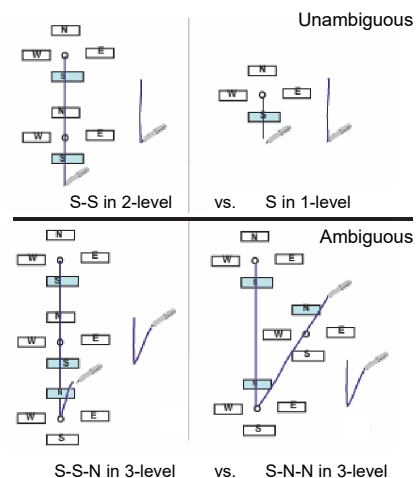
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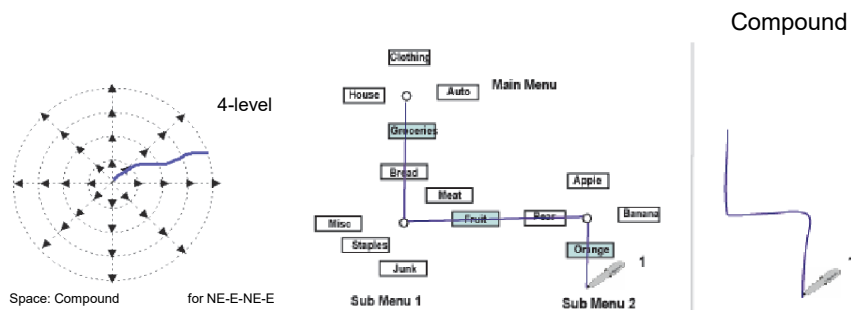


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Simple vs. Compound Mark Hierarchical Marking Menus

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- Problem: Compound marks can get big!

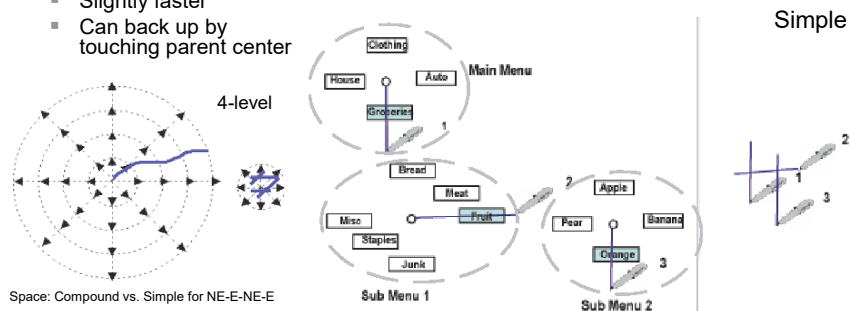


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Simple vs. Compound Mark Hierarchical Marking Menus

S. Zhao & R. Balakrishnan, *Proc. UIST* 2004, 33–42. <https://doi.org/10.1145/1029632.1029639>

- Solution: Use sequence of separate marks
 - Eliminates ambiguity
 - Much more accurate
 - Takes less space when strokes are overlapped
 - Slightly faster
 - Can back up by touching parent center

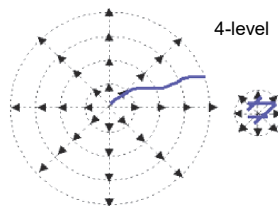


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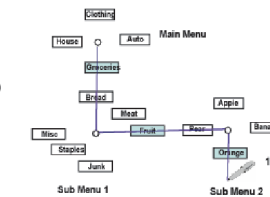
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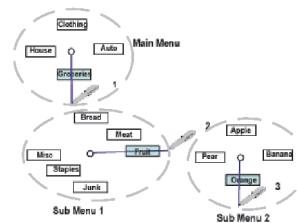
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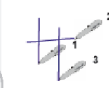
Space: Compound vs. Simple for NE-E-NE-E



Compound



Simple

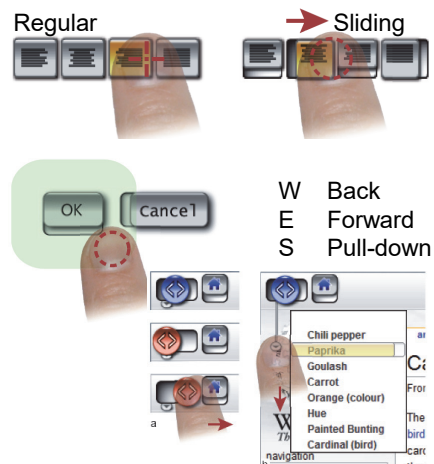


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Sliding Widgets

T. Moscovich, *Proc. UIST 2009*
<https://www.youtube.com/watch?v=k-bbgS8vUto>

- Avoid accidental activation in area-based selection by requiring selection area to slide in designated direction(s)
- Activation areas can overlap
- Directional activation
 - Creates radial-menu-like behavior with on-screen documentation
 - Allows multiple actions based on direction from a single widget or overlapping widgets

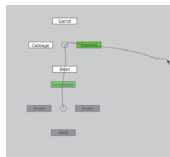
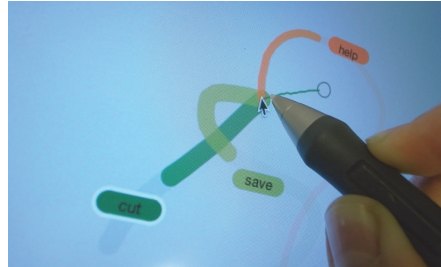


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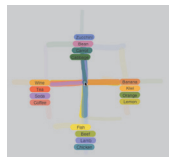
OctoPocus

O. Bau and W. Mackay, Proc. UIST 2008
<http://www.olivierbau.com/octopocus.php>

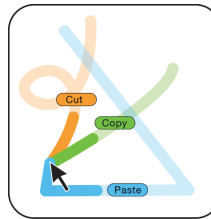
- Provide help for gestures using
 - Feedforward
 - Help before action
 - Feedback
 - Help during/after



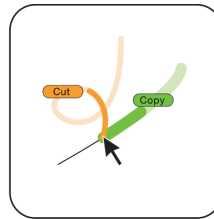
Marking Menu



OctoPocus



Before



During