

HUMAN-COMPUTER INTERACTION THIRD EDITION DIX FINLAY ABOWD BEALE

chapter 3

the interaction

extracts for MSc/MRes AISD

physical devices

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Physical design

- many constraints:
 - ergonomic – minimum button size
 - physical – high-voltage switches are big
 - legal and safety – high cooker controls
 - context and environment – easy to clean
 - aesthetic – must look good
 - economic – ... and not cost too much!

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Design trade-offs

constraints are contradictory ... need trade-offs

within categories:

- e.g. safety – cooker controls
 - front panel – safer for adult
 - rear panel – safer for child

between categories

- e.g. ergonomics vs. physical – MiniDisc remote
 - ergonomics – controls need to be bigger
 - physical – no room!
 - solution – multifunction controls & reduced functionality

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Fluidity

- do external physical aspects reflect logical effect?
 - related to affordance (chap 5)

logical state revealed in physical state?

e.g. on/off buttons


inverse actions inverse effects?

e.g. arrow buttons, twist controls

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inverse actions

- yes/no buttons
 - well sort of
- 'joystick'
- also left side control



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spring back controls

- one-shot buttons
- joystick
- some sliders

good – large selection sets

bad – hidden state



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a minidisk controller




series of spring-back controls
each cycle through some options
-natural inverse back/forward

twist for track movement
pull and twist for volume
- spring back
- natural inverse for twist

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physical layout

controls:
logical relationship
~ spatial grouping



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compliant interaction



state evident in
mechanical buttons

rotary knobs reveal internal state
and can be controlled by both user
and machine