chapter 3
the interaction
extracts for MSc/MRes AISD
physical devices

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!

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

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

inverse actions
• yes/no buttons
  – well sort of
• ‘joystick’
• also left side control

spring back controls
• one-shot buttons
• joystick
• some sliders
  good – large selection sets
  bad – hidden state
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

physical layout

controls:
 logical relationship
 ~ spatial grouping

compliant interaction

state evident in mechanical buttons

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