dialogue notations

what is dialogue?

- conversation between two or more parties
  - usually cooperative
- in user interfaces
  - refers to the structure of the interaction
  - syntactic level of human-computer "conversation"
- levels
  - lexical - shape of icons, actual keys pressed
  - syntactic - order of inputs and outputs
  - semantic - effect on internal application/data

structured human dialogue

- human-computer dialogue very constrained
- some human-human dialogue formal too ...

Minister: do you man's name take this woman ...
Man:  I do
Minister: do you woman's name take this man ...
Woman:  I do
Man:  With this ring I thee wed
(Woman rings finger)
Woman:  With this ring I thee wed (places ring ...
Minister:  I now pronounce you man and wife
lessons about dialogue

• wedding service
  - sort of script for three parties
  - specifies order
  - some contributions fixed – “I do”
  - others variable – “do you man’s name …”
  - instructions for ring
    concurrent with saying words “with this ring …”
• if you say these words are you married?
  - only if in the right place, with marriage licence
  - syntax not semantics

... and more

• what if woman says “I don’t”?
• real dialogues often have alternatives:
  Judge: How do you plead guilty or not guilty?
  Defendant: either Guilty or Not guilty
  - the process of the trial depends on the defendants response
• focus on normative responses
  - doesn’t cope with judge saying “off with her head”
  - or in computer dialogue user standing on keyboard!

a simple graphics package
state transition networks (STN)

- circles - states
- arcs - actions/events

state transition networks - events

- arc labels a bit cramped because:
  - notation is 'state heavy'
  - the events require most detail

state transition networks - states

- labels in circles a bit uninformative:
  - states are hard to name
  - but easier to visualise
hierarchical STNs

- managing complex dialogues
- named sub-dialogues

![Diagram of hierarchical STNs]

action properties

- completeness
  - missed arcs
  - unforeseen circumstances

- determinism
  - several arcs for one action
  - deliberate: application decision
  - accident: production rules

- nested escapes

- consistency
  - same action, same effect?
  - modes and visibility

state properties

- reachability
  - can you get anywhere from anywhere?
  - and how easily

- reversibility
  - can you get to the previous state?
  - but NOT undo

- dangerous states
  - some states you don’t want to get to
  - e.g. digital watch: time/alarm set, button press for 2 secs
checking properties (i)

- completeness
  - double-click in circle states?

checking properties (ii)

- Reversibility:
  - to reverse select 'line'

checking properties (ii)

- Reversibility:
  - to reverse select 'line'
  - click
checking properties (ii)

- Reversibility:
  - to reverse select ‘line’
  - click - double click

• N.B. not undo

example - nuclear control

• missing arcs
• dangerous state?
dangerous states

- word processor: two modes and exit
  - F1 - changes mode
  - F2 - exit (and save)
  - Esc - no mode change

  but ... Esc resets autosave

dangerous states (ii)

- exit with/without save → dangerous states
- duplicate states - semantic distinction

F1-F2 - exit with save
F1-Esc-F2 - exit with no save
lexical Issues

- visibility
  - differentiate modes and states
  - annotations to dialogue
- style
  - command - verb noun
  - mouse based - noun verb
- layout
  - not just appearance ...

layout matters

- word processor - dangerous states
- old keyboard - OK

layout matters

- new keyboard layout

intend F1-F2 (save)
finger catches Esc
layout matters

• new keyboard layout

intend F1-F2 (save)
finger catches Esc
F1-Esc-F2 - disaster!