

Monday 3rd March 1997

Theme of the day: Semantics of Interaction

Objectives

Introduce the concept of open development vs. closed world
frame and motivate the view of concurrent systems to be developed
Give some practical experience to illustrate the concept
e.g. OXO development as case-study
roomviewer in an OOP style idiom
jugs construction

Requirements

Some background tkeden-style tutorial material
Worked example of OXO as motivating illustration: exercises to reader

Shape of day

Overview of module

Introductory scene setting for open vs. closed concerns
traditional rational + empirical framework
Semantics of interaction / direct experience
spreadsheets + William James style discussion + observables / actions

intro to tkeden in conjunction with a worked example such as OXO
donald and eden only + general comments re public directory etc

practical themes:

experimentation, concurrent engineering, openness to extension ...

analysis of the OXO model wrt to openness and traditional issues
reasoning, communication, etc as in Manifesto paper

The Semantics of Interaction

M1 Lecture

1. A Perspective on Concurrent Systems

1.1. Concurrency and Agency

Dictionary definitions:

concurrent running, coming, acting, or existing together
concurrence joint action, coincidence, assent

agency / action

examples to illustrate concurrency

1. waterfall and birds singing
2. chamber music being played
3. participants acting in a meeting
4. word-processing as human-computer interaction

Issues to examine

no communication (waterfall and birds singing)
ambiguity over agency
(waterfall an agent? are birds? is a word-processor an agent)
subjectivity of synchronicity (do chamber musicians play precisely together?)
partial communication / independence and coincidence (meeting)
where existing together resides (the objective observer, "God", the listener)

concurrency has a strong experiential aspect:

can I pay attention to two things at once?
coming together is an association that presumes an external observer
how is disassociation of agents effected and their joint action apprehended?
(cf. computer analysis of sound / picture: disjunction and conjunction)

1.2. Interaction, agency, dependency, action

1.2.1. How to conceive agency?

Informal definition

agent a person or thing that acts or exerts power
 any natural force acting on matter
 one authorised or delegated to transact business for another

Thesis: Unhelpful to pursue mathematical / logical formalisation

agency as predicated upon interaction
agency as complementary to dependency
agency as a matter of choice re explanatory framework
 Elizabethan Chain of Being
 scientific reductionism

word-processor isn't an agent

I operate it: it's state doesn't change without my action
it doesn't do anything that I don't deliberately instruct (intend?) it to do

word-processor is an agent

I don't fully understand it's functionality
it functions erratically according to context: sun / dust on the screen
can't read the small fonts
I interact with it in an experimental manner

can malfunction
can give me a headache
can present a poem in an aesthetically pleasing way

agency as an acknowledgment of ignorance / incomplete understanding

Russell on agency in relativity

dispense with agency where prediction is possible
can conceive the (expected) states of the wordprocessor, and the possible interactions
of the user at some level of abstraction: but what if I press several keys at once?

agency as in essence associated with confounding expectations

"subjective notion": London underground isn't modelled as an agent when we say
"take the Central line to Oxford Circus then get on the Piccadilly line", but operates
less predictably when actually travelling by tube (then it may matter just when
the train comes, and it typically won't be predictable when)

1.2.2. Interaction, State and Dependency

Do something and "look" to see what "moves". Dennett p428

radar system in the harbour beams a radar picture of the harbour to the boats via TV
way of developing self-knowledge + identifying the external signs of our own bodily
movements

Chimpanzee can readily learn to reach through a hole in the wall of its cage for
bananas, guiding its arm movements by watching its own arm on a closed circuit TV
camera mounted quite some distance from his arm ... a decidedly non-trivial bit of
self-recognition, depending as it does on noticing the consonance of the seen arm
movements on the screen with the unseen *but intended* arm movements

what **moves**: presumes a representation of state

what moves: presumes a sense of identity, observable

presumes also agency with capability

to act

to remember and so have an expectation

and to correlate action with what moves

Summary

interaction at heart of concurrent system

concurrency, agency, dependency, action, state are notions that can most
appropriately be formulated with reference to the interaction between a person (or
person-like intelligent agent) and the world

even if!

experiment

may be

Lecture 1

Concurrency // Agency // Dependency // Action

Principles of representation

Eden I

definitive actions

script
DONALD
EDEN

observables / dependencies
actions

OXU
Case-File

Exercises

Lecture 2

Open vs closed

Traditional rational / empirical framework
Spreadsheets direct experience

Eden 2

Exercises

Discussion

M1 finish details . SIMAN quote

M2 Oxo paper + James' abstract

T1 Reactive systems analysis (slide?)
animism, artifact, automation

T2 LSD + mind LSD empirical aspect.

TR Vandalism ✓

W1 Explanation

Paper ARZU
Feb +

W2 | Rainey + Video stuff.

W3 ~

W4 ~~Community~~ Engineering

Worlds B + B Words
: process
IEE -

Thx Manifesto

Fri New direction.

Distribution of points.

1.1 random operation of independent agents

1.2. eden actions + random number generator.
" " + programmed action generator.

1.3. moving pointers / moving pointers

Small of pointers

Total D / eden

different fragments of same thing

1.4. subjectivity of synchronization?

actions firing one after another

1.2

2.4. adventure game environment

how to recognize agency.
with key open door etc.
match light fire
ladder rock shelf.

2.5. pattern with inherent dependencies + noise

can you detect dependencies?
identify agents

reintegrated
within context
reading
semantics

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2.6. traditional room creation exercise

2.7. lines: identifying dependencies