System development in EM

Have shown how the context for the use of LSD and the ADM can resemble that associated with railway history – an empirical evolution from wild to tamed behaviours …

… aim to understand this in its relation to orthodox studies of system development

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Empirical Modelling as conceived by WMB + SBR in *Empirical Modelling of Requirements* (1995) …
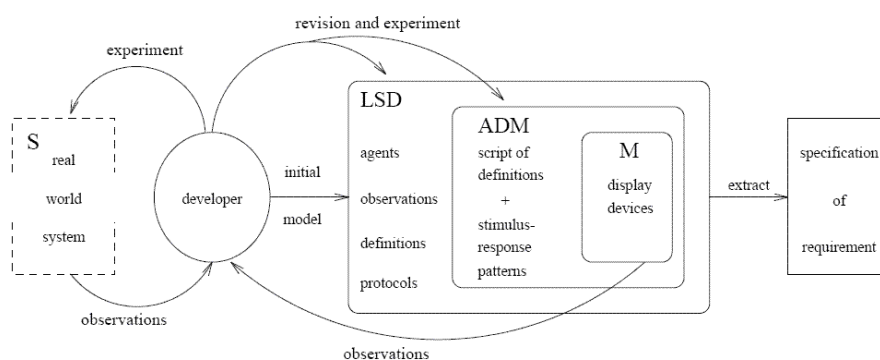

Figure 1: The empirical modelling process
"Empirical Modelling"

Actual development post-conception of WMB + SBR in
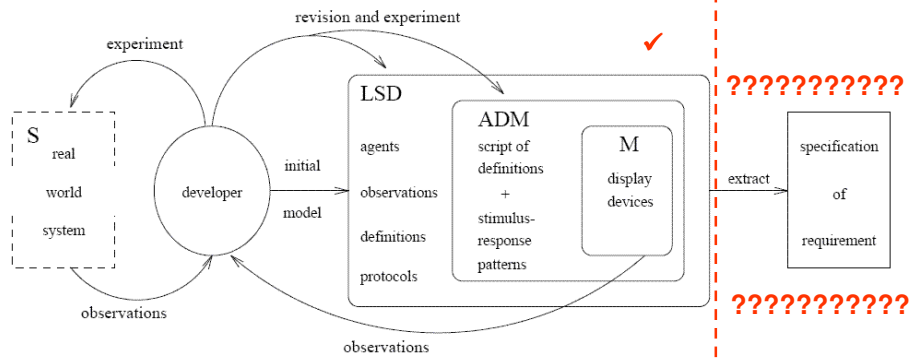*Empirical Modelling of Requirements* (1995) …

revision and experiment

experiment

✓

???????????

LSD

ADM

S
real

world

system

developer

initial

model

agents

observations

definitions

protocols

script of
definitions
+
stimulus-
response
patterns

M

display
devices

extract

specification

of

requirement

???????????

observations

observations

Figure 1: The empirical modelling process
"Empirical Modelling"

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3. Visual ("experiential") support

■ David Harel *On visual formalisms*
  CACM, 31(5) 1988

  Associated with the invention of the statechart
  and Harel's stance in *Biting the Silver Bullet*

  A style of thinking carried forward in UML and
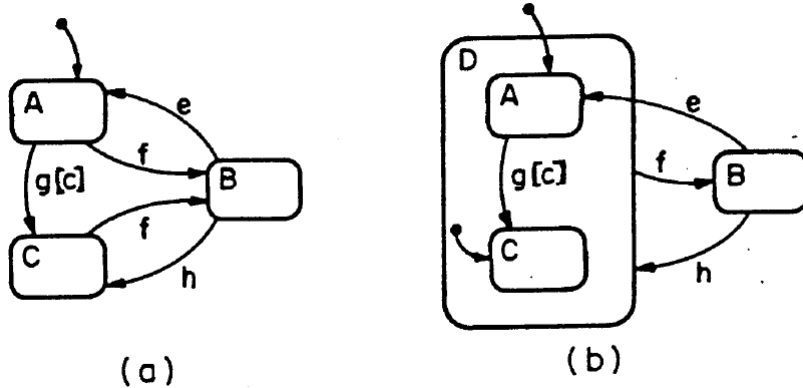   in Harel's work on *Play-in Scenarios*

David Harel's statechart concept

On Visual Formalisms, CACM 31(5), 1988

Generalisation of the FSM diagram …
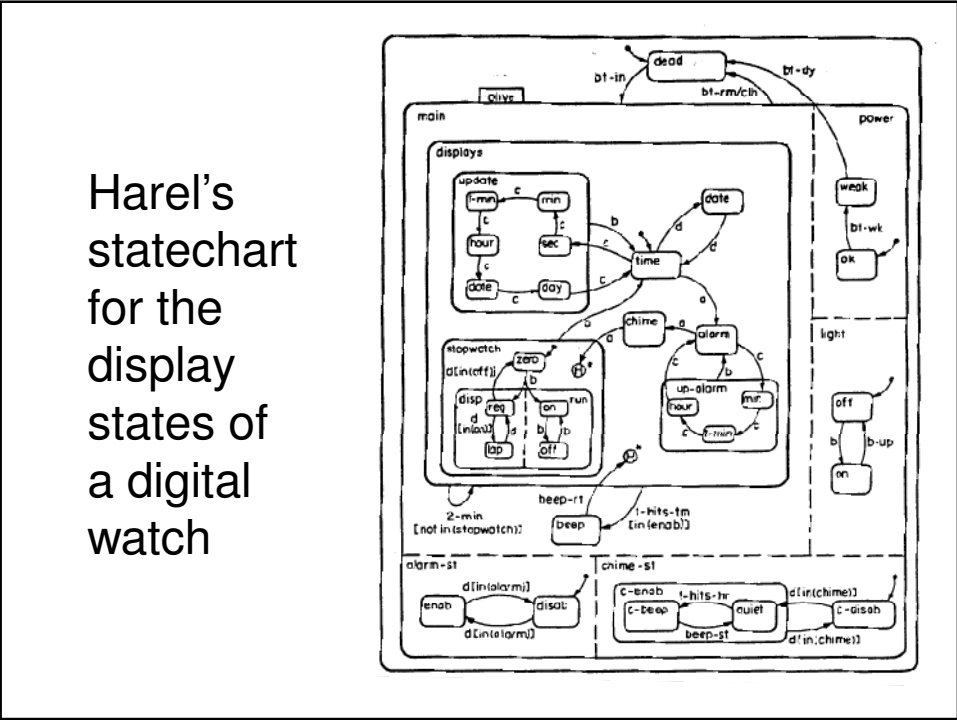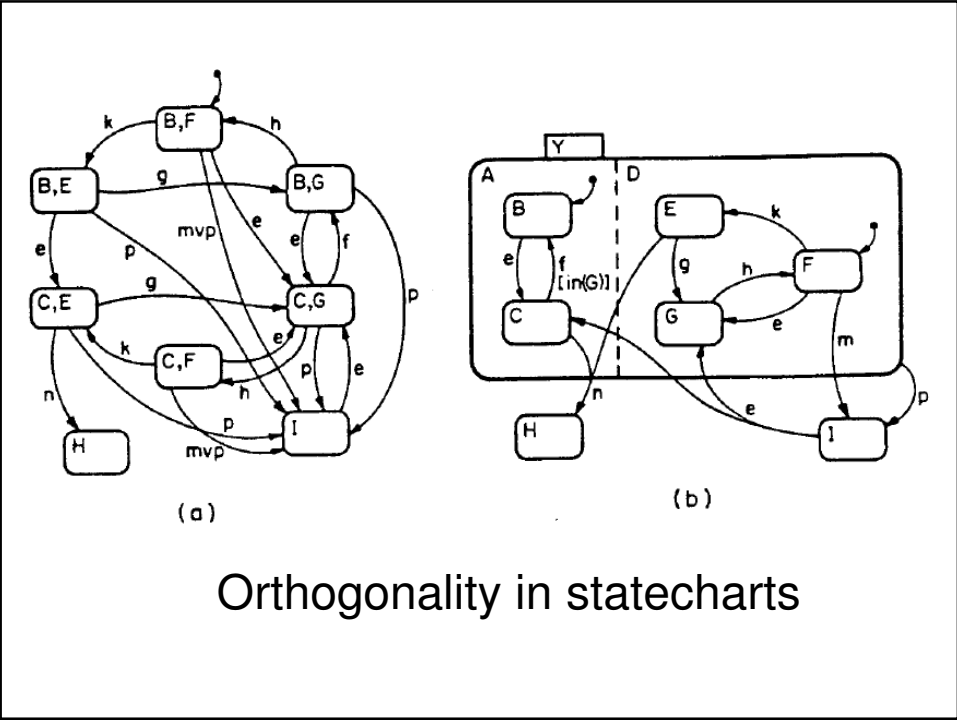
Statechart = state diagrams
  + depth + orthogonality
  + broadcast communications

(a)   (b)

Depth in statecharts

Orthogonality in statecharts

Harel's statechart for the display states of a digital watch

From the conclusion to Harel's paper "On Visual Formalisms" 1988

We are entirely convinced the future is "visual." We believe that in the next few years many more of our daily technical and scientific chores will be carried out visually, and graphical facilities will be far better and cheaper than today's. The languages and approaches we shall be using in doing so will not be merely iconic in nature (e.g., using the picture of a trash can to denote garbage collection), but inherently diagrammatic in a conceptual way, perhaps also three-dimensional and/or animated. They will be designed to encourage visual modes of thinking when tackling systems of ever-increasing complexity, and will exploit and extend the use of our own wonderful visual system in many of our intellectual activities.