

Perspectives on Concurrent Systems

Sources for Part II on Concurrent Systems

- Main source is lectures from the (old) MSc module entitled EM for Concurrent Systems
- Access this material from 'Teaching' tab on the EM webpage and the link EMfCS
- The ODA framework is best understood, and motivated, by its use in the context of concurrency

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Varieties of Concurrent System

- Formal approaches (concurrent *processes*) and informal experience (everyday concurrency)
- Compare computer science and natural science
- Compare the contrast of *program* and *model*
- Challenge of modern computing applications
- Why such a gulf between behaviour as experienced and behaviour as abstracted?

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Commonsense Concurrency

- What counts as 'concurrent' depends on who is observing, and how they observe
- What is concurrent depends on what the observer can distinguish and conjoin
- What is concurrent also depends on observer's viewpoint and faculties
- Role of the 'external observer' who perceives (creates?) a concurrent system

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Agency in Commonsense Concurrency

- Without agents there would be nothing to be 'concurrent'. (Must state-change be 'caused'?)
- *Exercise*: read examples in lecture and describe a scenario of your own. Identify the agents.
- Could you 'formalise' your example? What would be lost, or gained, by doing so?
- Are your agents 'objective', or do they depend on the 'external observer' (as in lecture)? How?

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EM Analysis of Commonsense Concurrency

- The external observer (modeller) develops insight through building an artefact and interaction with the artefact.
- Observables constitute 'state' and must have identity through change as perceived by agent
- Three views of agency help to locate focus of EM
- Interaction revealing our, and other, agency
- Fundamental role of 'do-and-see' in identification of dependencies

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