

'Making construals' as a key to innovation in computing education

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Context for this talk ...

- European shortage of software expertise
- challenge of adapting to new requirements
- the failure of software methodologies
- the human cost of rule-based regimes in everyday life

Much programming effort is directed at maintaining relationships within software that are vital in integrating with our mental models

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Premise behind this talk ...

- the way in which we think of computing activity is too limited
- computational thinking doesn't account for the practices that precede s/w development in contemporary applications
- not all the relationships that inform our mental models can be interpreted computationally

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Computing education

The focus of a major new UK initiative: issues

- a decline in interest in computer science as a university subject
- poor computing education in schools?
- *substituting* computer science for information and communications technology (ICT)
- promoting 'computational thinking' as a foundation for computing e.g. introducing algorithmic concepts in the primary school

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'Making construals'

- a principled way to exploit computer-related technology, broader in scope than computational thinking
- doing full justice to contemporary computing-and-the-wild
- embracing and integrating the educational agendas of computer science **and** ICT

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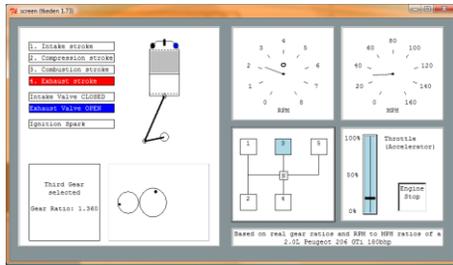
Key idea behind 'making construals'

The relationships that inform our understanding of the world have first to be expressed through constructing physical or virtual objects that we can interact with .. such "interactive artefacts" enable us to represent and communicate "how we think things work" – capturing how we *construe* something ... we call these **construals** and we can use the computer to make them

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A construal of an engine with gears Seb Sidbury (2011)



12 August 2015

Seb Sidbury

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CONSTRUIT!

A Strategic Partnership comprising six European institutions under the EU Erasmus+ scheme to promote / demonstrate the merits of making construals as a new computing practice

Having its main focus on school education, but with a broad range of target groups

Funding (420K euros) to support a range of collaborative learning activities over 3 years



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CONSTRUIT! partners

- Warwick University, UK
- The University of Eastern Finland
- Comenius University, Slovakia
- Edinburgh University, UK
- Edumotiva, Greece
- Helix5, The Netherlands



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Qualities of Making Construals

- accessibility
- comprehensibility
- potential for collaborative deployment
- scope for instrumentation for monitoring and evaluation of learning activities
- support for the incremental construction and evolution of open educational resources
- wide applicability across disciplines and contemporary technologies

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Intellectual outputs of CONSTRUIT!

An open online course, comprising

- a curriculum
- an environment
- online materials

to support 'making construals'

An evaluation of the open online course, and of the claims made for their qualities



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Potential impact

- Wider adoption of computers in a context where non-experts can contribute in collaboration cf. Chris Granger and EVE
- An alternative approach to software engineering rooted in 'lived experience'
- A reconceptualisation of computing that unifies theory and practice



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QUESTIONS?