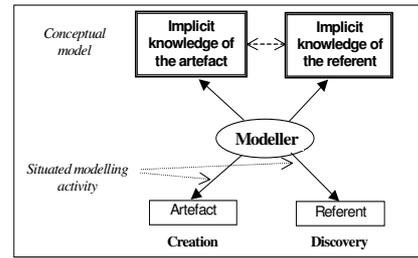


The Onion Metaphor

Beynon and Roe, 2002



Modelling the modeller's understanding

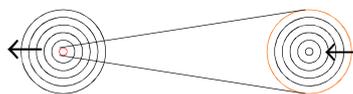
How experience informs our construals

As we make a construal, we observe and capture observables and dependencies ...
 We begin with the most self-evident and familiar observables and relationships ...
 ... once these are expressed in the construal, they become an implicit backdrop to all interactions, taking on the character of assumptions crucial to the perspective we adopt

How experience informs our construals

As we elaborate a construal, we introduce more sophisticated observables and dependencies ...
 We are less familiar with these, and have to work harder to construct and sustain their context...
 ... in the construction, new interactions get assimilated into the construal, first taking on the character of speculative assumptions subject to be revised, then being understood together with their characteristic context for interaction

The Onion Metaphor



Theory building:
 "Quality" of knowledge

Experimental understanding:
 "Quantity" of interaction

| | | |
|-----------------------|-----------|----------------------------|
| core knowledge | innermost | least tested understanding |
| extending theory | ↓ ↑ | refining experiment |
| speculative knowledge | ↓ ↑ | most secure understanding |

Interpreting the diagram ...

The red region on the left is typically associated with observables and definitions that have been present for longest ...
 ... they are the ones that have been subjected to most empirical validation
 ... if the context is found to be sufficiently objective, these observations can be seen as underpinning core theory

Diagram above is oriented towards establishing or exposing an objective interpretation, as when developing or illustrating a theory ...

What is the science behind something we observe?

An alternative motivation for EM is in critiquing and exploring possible interpretations, prior to – and possibly without any necessary expectation of – reaching an ‘objective’ understanding ...

cf. humanities scholarship, experimental science

Varieties of experience

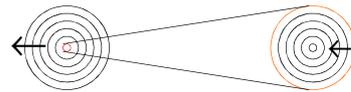
- cf. A: redefining lines in OXO vs B: redefining static evaluation function
- cf. A: making contentA exceed capA vs B: changing the target for the Jugs instance

Context for interaction

A “open-ended” vs B “constrained”

Little scope for *theory* in context of A-interactions

The Onion Metaphor



Theory building:
“Quantity” of knowledge

Experimental understanding:
“Quality” of interaction

| | | |
|--------------------------|-----------|------------------------------|
| least established theory | innermost | most refined interaction |
| extending theory | ↓ ↑ | refining experiment |
| | ↓ ↑ | |
| most stable theory | outermost | least restricted interaction |

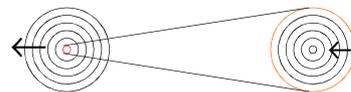
Interpreting the diagram ...

The red region on the right is typically associated with the most speculative interactions ...

... they are the ones that have been subjected to least empirical validation

... if a suitable context can be established, these observations can be seen as disclosing new potential for interpretation

The Onion Metaphor



Theory building

Experimental understanding

instructionist
theory-driven ICT
formal symbolic objective
logic and language
method and system

constructionist
experiment-driven ICT
personal experiential
artefact and interaction
exploration and environment

The SIN principle

- Situation
 - need context dependent representations of knowledge
- Ignorance
 - need to embrace idea of unknown but neighbouring knowledge
- Nonsense
 - need to be open to exploration that is open-ended and can lead to obscure/incoherent results
- Illustrated with reference to a clock model [#072]

SIN in EM activity

- Situation *observing*
 - where am I? what do I observe in the situation?
- Ignorance *experimenting*
 - what if? what is my role? what is my purpose?
- Nonsense *interpreting*
 - does it make sense to ... ? how come ... ?

Themes in EM model-building

- tolerance of error
- no 'right' answer
- favouring experiment
- orientation and purpose is open
- computer as an artefact
- open-ended extension of model
- (opportunistic) projection of meaning