

Features, Fitness and Variation

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Research Interests

- What makes a system “work”?
 - i.e. as a black box in its activity context, not as a CS mechanism
- How do systems evolve and vary?
- Methodology
 - How can we analyze a given or proposed system to clarify and design for fitness?
 - E.g. ScenIC goals and scenarios
- Philosophy
 - Conceptual integrity & change

Why?

- SE/HCI practice
 - Understand better what makes systems work so we can design them more confidently
- Philosophy
 - Information artifacts are peculiar “things” - how can we even talk about them unless we have a theory of identity and variation?
- E.g. information appliances
 - Claim that an appt. book is different from a timepiece or an annotatable electronic book

Contents

- Features and their individuation
 - What is a feature? If a system is a collection of features, what is it? What do “same” and “different” mean?
- “Teleogenesis” (Change of purpose)
 - Features as ascribed goals.
- Fitness, variation and change
 - What is it that changes & can we measure and track it?

Word processing features and products

- Products
 - WordPerfect
 - Ami/WordPro
 - MS Word
 - ...v6.0, 95, 7.0, 98...
 - FrameMaker
 - emacs (?)
- Features in MSW
 - Text entry and editing
 - Search and replace(?)
 - Page numbering
 - Part of page formatting?
 - Spell checking
 - Is the Spellchecker a feature or parasitic product?

Example IA product line: EOS cameras

- 630
 - 730
 - 750 QD
 - 850
 - Rebel/1000
 - Rebel S/1000F
 - Rebel II/1000N
 - Rebel IIS/1000FN
 - Rebel X
 - Rebel XS/500
 - Rebel G/500N
 - Rebel G QD
 - Elan/100
 - Elan II
 - Elan IIE
 - A2
 - A2E/5
 - 1
 - 1N
 - 1N-RS
 - 3
- Can we draw a tree? Do they really evolve that way?

Goal Ascription

- Artifact has features
- Features embody assumptions
 - Not necessarily recognized or articulated by designers
- If artifact could talk to us, what would it say about its view of its context?
 - What its users want to do
 - Behavioral sequences/scenarios

Research Goals

- Explicit & reliable means of feature individuation
 - May be goal/task or schema based
 - May be based on UI/doc. deconstruction or preconceived models
- Feature paleontology/natural history
 - Record existing & obsolete items in product lines and competition
 - Patterns of change
- Feature ecology
 - What features confer advantage?
 - Use of std. usability/usefulness methodologies
- Architectural constraints on feature variation
 - Feature allocation to architectural features in practice

Change metaphors

- **Biology**
 - Evolution
 - Ecological succession
 - Ontogenesis
- **Cognition/learning**
 - Simple learning
 - Conceptual change
 - Scientific theories
- **Social artifacts**
 - Buildings
 - Urban growth
- **Technology**
 - Artifact evolution
- **Theory**
 - Dialectic
 - Process ontology