Visualization Analysis & Design

Why represent the all data?

Validation methods from different fields for each level

Why analyze?

Dataset and data types

Why focus on tasks and effectiveness?

Why use an external representation?

Analysis framework: Four levels, three questions

Actions II: Query

Actions I: Analyze

Actions III: Explore

Why have a human in the loop?
Idiom: Animated transitions

- smooth transition from one state to another
- alternative to jump cuts
- support for item tracking when amount of change is limited
- example: multilevel matrix views
  - scope of what is shown narrows down
  - red Nile block shrinks to fit space, additional structure appears within
  - other blocks squash down to increasingly aggregated representations

Definitions: Marks and channels

- marks – semantic primitives
- channels – control appearance of marks

Channels: Rankings

- expressiveness principle
  - match channel and data characteristics
- effectiveness principle
  - encode most important attributes with highest ranked channels

How to encode: Arrange space, map channels

1. vertical position: mark: line
2. horizontal position: mark: point
3. vertical position: horizontal position: mark: point
4. vertical position: horizontal position: color hue: mark: point

Encoding visually with marks and channels

- analyze idiom structure
  - as combination of marks and channels

Channels: Matching Types

- expressiveness principle
  - match channel and data characteristics

How to handle complexity: 3 more strategies

- change over time
- reduce items/attributes within single view
- derive new data to show within view

Idiom: Linked highlighting

- see how regions contiguous in one view are distributed within another
- powerful and pervasive interaction idiom
- encoding different
  - multiform
  - data all shared

System: EDV

Encoding visually

- analyze idiom structure

How to handle complexity: 3 more strategies

- change view over time
- facet across multiple views
- reduce items/attributes within single view
- derive new data to show within view

Facet

- Juxtapose
- Coordinate Multiple Side By Side Views
- Share Data: All/Subset/None
- Linked Highlighting
- Superimpose
- Share Navigation

Manipulate

- Change
- Select
- Navigate

Reduce

- Justique
- Partition
- Superimpose
- Embed

Filter

- Derive
- Aggreate
