Introduction to Legal Visualization

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The task of legal visualization

• The law appears in
  – legal texts
  – typed legal situations

• Importance of **textuality will decline** and that of **legal programming will increase** with socially and legally used machines
Schema „Legal Visualization“
Proposal for the Meta-Discourse
A general schema for visualization

Law State → Legal Stage
A general schema (2)
A general schema (3)
A general schema (4)

Meta-Systems
Language, Logik, Ontologies

Law State

Legal Stage

Text

Vis

TEXT Pattern

VIS Pattern
A general schema (4)
A general schema (5)
A general schema (6)
A general schema for visualization

- 7 layers

1. **Universalia ante rem** (Plato). Ideas, categories, ontologies

2. **Universalia in re** (Aristotle)
   - Thing, phenomenon
   - “8 vertices, 12 edges, 6 faces”

3. **Primary description**
   - Text
   - Sign
   - Visualization

4. **Theory**
   - Patterns
   - Text
   - Meta-sign
   - Visualization

5. **Meta-theory**
   - Meta-discourse
   - Text
   - Meta-meta-sign
   - Visualization

6. **Universalia post rem** (nominalism)
   - Left brain
   - Right brain
   - Thinking: abstract/conceptual
   - Text, language
   - Thinking: plastic/visual
   - Picture
   - Emotions

7. **Emotions**
Verbal writing and pictorial writing

(1a) SENDER

(2a) Speaking
- e.g. Latin

(2b) Verbal writing
- e.g. Latin

(2c) Visualization
- auxiliary

(3a) Pictorial writing
- e.g. Chinese

(3b) Text
- figure caption
- auxiliary

(4) SEMANTICS

(5) SYNTACTIC RULES

(5a) For speaking
- strict

(5b) For verbal writing
- strict

(5c) For pictorial writing
- elastic

(3) SEMANTIC LINK

Iconic

(1b) RECEIVER
Pictures about the law
Legal stage

Ought

Is
The hierarchy of legal sources

1. Constitution
2. Law
3. Statute
4. Decision
Trial as a ping-pong with a court
Sales contract
Thesaurus/ontology

• Types of relations
Legal framing

• Framing: political, legal, etc.
Granularity

• What is the smallest entity of the text of a legal act?
Analogy of methods in *Begriffsjurisprudenz* and legal ontologies

• Legal documentation system
Legal visualization

• The task: to make visible:
  – pre-textual dependencies of legal terms
  – types of legal situations

• Two methods (Florian Holzer 2010):
  – Schematic-logical legal visualization
    • To put concepts into order
  – Scenery-situative legal visualization
    • To depict a situation, its elements and relations
Situational visualization in law

• Situation versus case
  – **Situation** dominates in a legal machine
    • Legal machine models the situation
  – **Case** dominates in an expert system.

*Ex ante* interpretation by citizens.
Roles, not rules

*Ex post* interpretation by courts
Situation needs modelling

• Multiple meanings of a situation
  – Stakeholders view differently
  – Multiple ways of modelling
    • Story-telling, films
      – “Menzi-Muck timber case – the Film!
http://www.youtube.com/watch?v=KI7zeuayum4
      – Tele-Jura project, http://www.telejura.de/

• Modelling alternatives is not trivial
  – Possible worlds in modal logic
    • Difficult to understand for a layman
Notation for situations

• Answer 3-Questions
• Entities and relationships
• “Extensional relational structure” in informatics
In military and avionics

**Situation Awareness** is

- the perception of the elements in the environment within a volume of time and space,
- the comprehension of their meaning, and
- the projection of their status in the near future.

Endsley (1988)
Endsley’s model

- Endsley’s definition is very good, the model is not. (Hone 2006)
- The definition cannot be operationalised
The 3-Questions Model (Hone 2006)

• Refine the Endsley’s definition:
  “a person’s perception of elements in the environment within a volume of time and space”

  WHO IS WHERE?

  “the comprehension of their meaning”

  WHAT ARE THEY DOING?

  “the projection of their status in the near future”

  WHAT WILL THEY DO?

• Can be operationalised
Conclusions

• A general schema for visualization is presented
• No uniform notation for situations
  – Neither textual, nor graphical
  – Multiple meanings and ways of modelling
Thank you

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