Exploring Intelligible Associations

Ontological and process issues

Part B: Integrative modes and metaphors:
“ways of knowing”

Anthony Judge and Nadia McLaren

Union of International Associations

at

German Research Center for Artificial Intelligence GmbH
(Saarland University, Saarbrücken)
2. Associations and complexity
   – cognitive and otherwise
Evolving pattern of associations in a learning society

- Associations of ideas, *concepts*, theories
- Associations of different *technologies*
- Associations across *cultures*
- Associations across faiths and *beliefs*
- Associations of *values* (for quality of life)
- *Aesthetic* associations
- Associations of *people* and other bodies
Strategic opportunities for association

• New associations of ideas, concepts, theories
• New associations of different technologies
• New associations across cultures
• New associations across faiths and beliefs
• New aesthetic associations
• New metaphors
• New associations of people and other bodies
Implementing associative strategies

- Exploring new patterns of concepts, theories
- Exploring new inter-modal technologies
- Exploring cross-cultural fertilization
- Exploring dialogue across faiths and beliefs
- Exploring new aesthetic associations
- Exploring new metaphors
- Exploring new associations of people, groups, etc
3. Crisis of meaning

-- faith-based vs evidence-based reality
Contemporary crisis of meaning

- Conceptual incoherence in strategy
  - global
  - local

- Loss of sense of direction

- Loss of faith in systems and beliefs

- Fragmentation of initiatives

- Inter-disciplinary chaos and disrespect

- Conceptual and policy gridlock

- Severe erosion of institutional credibility
Frenetic strategic desperation

• Overproduction of
  – appeals
  – manifestos, declarations
  – resolutions

• Mutual recrimination

• Unrelated new initiatives
  – unrealistic action plans
  – proliferation of organizations
  – content-free conferences
Individual and collective uncertainty

- Crises in financial system
- From employment to unemployment
- Social insecurity (safety net inadequacy)
- Urban violence and personal safety
- Environmental fragility
- Erosion of moral and ethical standards
- Institutional corruption
- Policy indecision & Leadership vacuum
- Policy discontinuity -- broken promises
• Whose values?
  – whose values are recognized?
  – whose values are neglected?
  – what meaning do they have locally?
• Who designs the system of global values?
  – how are the values related?
• Who imposes the values?
  – what of alternative values?
  – and those who disagree?
• How do new values emerge...for the future?
4. Policy challenges of the emergent knowledge society
Information overload & underuse

- A truism -- there is “too much” information
- Overproduction of information
- Limited dissemination / readership
- Diminishing collective attention span
- Fragmented & disorganized information
- “Dumbing down” public information
- Unreliable information -- misinformation
- An analogous problem?: overpopulation
The Information Game

Access

Classification

Penetration

Disinformation

Dissemination

Interpretation

Property

Complexity

Overload

Junk mail

Misrepresentation

Hype

Restrictive practices

Dirty tricks

Dubious informants

Credibility

Surveillance

Security

Secretiveness

Mistrust

Conspiracy

Numbers

Gatekeepers

Junk mail

Overload

Numbers
The Relationship Game???
Inappropriate policy metaphors
for a rapidly evolving society

- Military metaphors (for peaceful purposes)
  - targeting... population groups
  - mobilizing... support
  - war... on drugs
- Simplistic, selective, static, linear metaphors
  - vision (but no other sense)
  - programming... people and organizations
  - points in a line of argument
  - state of the world / environment / etc
5. Challenges of knowledge organization
Knowledge organization: “Technical” challenge

- scope / comprehensiveness
- response to detail
- mathematical representation (modelling / simulation)
- visualization (geometry / topology)
- user interactivity: change of perspective and degree of detail
- compatibility / consonance with popular frameworks (possibly as carriers)
- intuitive/psychological consonance
- memorable / mnemonic challenge
- adaptability / openness
Knowledge organization: “Strategic” challenge

- complementarity of incommensurable / opposing perspectives (keystone function)
- global comprehension (grokability)
- strategic insight for governance and communication channelling
- compatibility / consonance with popular frameworks (possibly as carriers)
- intuitive/psychological consonance
- memorable / mnemonic challenge
Knowledge: “Psycho-cultural” challenge

• Axes of methodological bias *(W T Jones)*
  - Order vs disorder; Static vs dynamic Continuity vs discreteness; Inner vs outer; Sharp focus vs soft focus; This world vs other world; Spontaneity vs process

• Epistemological mindscapes *(Magoroh Maruyama)*
  - H (homogenistic, hierarchical, classificational); I (heterogenistic, individualistic, random); S (heterogenistic, interactive, homeostatic); G (heterogenistic, interactive, morphogenetic)

• Work-related values *(Geert Hofstede)*
  - Power distance; Uncertainty avoidance; Individualism; Masculinity

• Modalities in dialogue *(Kinhide Mushakoji)*
  - Affirmation; Negation; Affirmation and negation; Non-affirmation and Non-negation

• Modes of reality construction *(Will McWhinney)*
  - Analytic; Dialectic; Axiotic; Mythic

• Forms of intelligence *(Howard Gardner)*
  - Linguistic; Musical; Logical/mathematical; Spatial; Bodily-kinaesthetic; Personal
“Ontology”

- Formal description of categories and relations
- Derived from shared discourse of a knowledge community
- Pragmatic, not intended to be “true”
- Used to provide a common framework into which disparate data sets can be translated
- Not created in a “pristine” state
Ontology - Phase 1: Focus on the data level

- Identify initial set of data providers and form a consortium of data providers
  - The GDG as a “VO”
  - Perhaps á la the Gene Ontology Consortium
- Clean and normalize existing data sets (according to internal standards of data provider)
Ontology -- Phase 2: Focus on the ontology level

• Collaboratively define an ontology of globalization.
  – A series of workshops
  – Involve representatives of stakeholder groups
    – data providers, users and developers
• Choose an encoding standard for the ontology
  – OWL?
• Define a methodology for ontological mapping of contributor data sets
Ontology -- Phase 3: Focus on the middleware level

- Build a grid hub at Princeton University (see diagram at end of document).
- Develop an ontology “filter” to process incoming data sets.
- Develop a data aggregation caching mechanism for ontologically filtered data sets, which will be accessible by the analytical services.
Ontology -- Phase 4: Focus on the analytical and visualization level

• Choose a flexible application development framework
• Create a NetMap client for data users
• Provide an interface with basic functions:
  – search, select, sort, count, etc. of data
• Provide interface with higher-order functions
  – E.g. data mining.
• Use a “participatory design” process
6. Integrative modes and metaphors: “ways of knowing”

1. Popular symbol systems (astrology, tarot, leys, etc)
2. Lists (selected, prioritized, nested, search hit lists)
3. 2-D Matrix (4-cell, n-cell)
4. Triangular mapping
5. Complementarity diagrams (“correspondences”)
6. Network mapping (self-organizing network maps)
7. Models, simulations, interactive games
8. Circular relationship maps (loop representation)
9. Multi-media, sonification
10. Mapping complexity plane (Mandelbrot set fractal)
11. Spherically configured 3-D structures (polyhedra, etc)
12. Transformable structures, morphable images
Mode 1: Traditional symbol systems
Insights into policy cycles in Imperial China
Hindu yantra
Mode 2: Lists - unstructured and otherwise

- *Book of Lists*
- Prioritized lists (political “key issues”)
- Nested lists (asystemic)
  - UN/OECD Macrothesaurus
  - Agenda 21
- Hit lists (web search engine results)
- Bulleted lists (as this slide !!!)
Database selected: **World Problems - Issues**

Registered user ANTHONY_JUDGE | Free search | Full profile

21 Aug 00

[New Search] [With alternative titles] [Reload as table] [Un-nested list] [Map]

**Tree structure presentation for keywords: FORESTS**

Tree structure analysis for: Narrower problems; reload for alternative analysis based on:
--- [Broader...] [Related...] [Aggravates...] [Aggravated by...] [Reduces...] [Reduced by...]
Analysis requested for 2 rings; reload for 3 4 5 6 7 rings
Links from titles below access profile (from which other types of [tree structure] analyses can be requested)
Chain ends marked by |. Any duplicated items marked by **
Extend analysis in current mode through any [more] links below. Use table presentation to print for annotations
Save (and edit) page to use as special thematic interface to access profiles

| - Deforestation [more]  
  |   - Forest decline |  
  |   - Forest fragmentation |  
  |   - Tropical deforestation ** |  
  |   - Fish-bone deforestation |  
  |   - Deforestation in time of war |  
  |   - Deforestation of mountainous regions |  
  |   - Destruction of wildlife habitat by fire |  
| - Endangered forests [more]  
  |   - Threatened forest habitats [more] |  
  |   - Threatened plantation trees |  
| - Forest decline |  
| - Unsustainable development of forest lands [more]  
  |   - Inappropriate tree plantations |  
  |   - Inadequate watershed management [more] |  
  |   - Environmental hazards from logging [more] |  
  |   - Disruptive migration to forest lands |  
  |   - Unsustainable cultivation of long-lived trees |  
  |   - Misuse of tropical rain forests for agricultural development ** |  
| - Tropical deforestation ** |  
| - Unethical practices in forestry [more]  
  |   - Logging of old stand forests |  

Database selected: World Problems - Issues (?)

Registered user ANTHONY_JUDGE | Free search | Full profile

Index extract on: 21 Aug 00 | [Browse alphabetic index?] | [Browse subjects?] | [Equivalent for Strategies | Organizations]

23 Item(s) found for keyword(s): FORESTS
Sort order requested: None

Selection below: Unrestricted. User is: Anthony Judge

Page: 1 (no more pages) [New Search] [With alternative titles] [With analysis] [Tree structure] [Map]

- Deforestation [**]
- Endangered forests [*]
- Forest decline
- Unsustainable development of forest lands
- Tropical deforestation [*]
- Unethical practices in forestry
- Threatened alluvial forests habitats
- Misuse of tropical rain forests for agricultural development
- Inundation of forests through dams
- Threatened montane tropical forest habitats
- Threatened cool temperate wet forest habitats
- Illegal forest clearance
- Logging of old stand forests
- Threatened tropical dry forest habitats
- Threatened forested peatland habitats
- Threatened warm temperate moist forest habitats
- Undervaluation of forests
- Threatened serpentine forest habitats
- Threatened habitats of tall, dense needle-leaf conifer forests
- Threatened subtropical and temperate rain forests or woodlands biome
- Threatened temperate needle-leaf forests or woodlands biome
- Threatened evergreen sclerophyllous forests, scrubs or woodlands biome
- Threatened temperate broad-leaf forests or woodlands biome
Database selected: World Problems - Issues

Index extract on: 21 Aug 00

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Part B: Integrative modes and metaphors: "ways of knowing"

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Mode 3: 2-D Matrices

- 4-cell (Wilber quadrants)
- Input-Output diagrams (resources, accounting)
- N-cell (Int. Concept Classification)
- N-cell (UIA Functional classification)
UIA Functional classification matrix

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<td>Philosophy</td>
<td>Aesthetics</td>
<td>Security</td>
<td>Morals, ethics</td>
<td>Community</td>
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Mode 4: Triangular mapping
ICA Social process triangles framework
Triangular relationships
Mode 5: Complementarity diagrams ("correspondences")

UIA Interlinked knowledgebases
12 Languages of governance
Mode 6: Network mapping

- Static maps
- Self-organizing network ("spring") maps
- Touchgraph
- Decision Explorer
Knowledge organization relating to terror
Tasks type: Aggravates problems for Deforestation

This version only includes problems in loops (Loop total = 378). See also [non-loop map] [loop pattern]

Below for mouse button use and how to redefine map:

Hazardous locations for nuclear power plants
Environmental pollution
Excessive population mobility
Environmental degradation due to creation of dams and lakes
Water flow obstructions in watercourses

Difficulties with map display? In many cases these are due to the number of items requested - try a smaller selection. Sometimes the mouse functions do not work - try restarting your browser (or reboot to reinitialize the applet). Other errors may be due to defects in the data - we are working on them! If you do not like the colours, scale, background, line length or complexity -- then try changing them!
Conference mind-mapping

Urban slums

Ozone as a pollutant

Deforestation

Acidic precipitation

Unsustainable population levels
Conference mind-mapping

Discrimination against women
Social subjugation of women
Wife abuse
Infantilization of women
Violence against women
Restriction of freedom of expression
Discrimination against women in employment
VRML Example: Organizations - network

Org E5983: European Council of Town Planners
Scalable vector graphics

Discrimination against women
Problem loops sustaining irresponsible policies
Mode 7: Models, simulations, interactive games

• Economic models

• *Limits to Growth*

• World modelling

• World building games
Interactive modelling: *Soda constructor*

http://sodaplay.com/constructor/player.htm?
Mode 8: Circular relationship maps & loop representation

- Netmap
- UIA maps
- Loops
Crop rotation as a policy metaphor

Illustration of a sustainable 4-cycle policy
### Progressive refinements of problem loops

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<td>6,000</td>
<td>15,958</td>
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</table>
Deforestation

Overview of loop patterns for problems that Deforestation **aggravates**.

Table 1 shows chain of impacts (presented elsewhere as a nested loop list). **Max. number of loops currently listed**: 15 (of 49).

- Each row of table is a loop (starting from left-most coloured column).
- First (left-most) coloured column items impact second column items (2nd column items impact 3rd, etc).
- Last column items loop back to impact those in first column.
- The pattern is helpful in highlighting questionable links and errors.

Table 2 gives names of problems in cells of Table 1. Click on any links in Table 2 to access profile (from which other types of information can be requested). Switch to the alternative presentation to get an overview for problems that Deforestation is **aggravated by**.

<table>
<thead>
<tr>
<th>Loop</th>
<th>A</th>
<th>AV</th>
<th>AC</th>
<th>AB</th>
<th>AE</th>
<th>Q</th>
<th>P</th>
<th>K</th>
<th>M</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loop 1</td>
<td>_A</td>
<td>AV</td>
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<td>AB</td>
<td>AE</td>
<td>Q</td>
<td>P</td>
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<td>M</td>
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<td>Loop 2</td>
<td>_A</td>
<td>AC</td>
<td>AB</td>
<td>AE</td>
<td>Q</td>
<td>P</td>
<td>K</td>
<td>M</td>
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<td>_A</td>
<td>AC</td>
<td>AB</td>
<td>AK</td>
<td>AE</td>
<td>Q</td>
<td>P</td>
<td>K</td>
<td>M</td>
</tr>
<tr>
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<td>AC</td>
<td>AB</td>
<td>AK</td>
<td>_Y</td>
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<td>P</td>
<td>K</td>
<td>M</td>
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<td>_L</td>
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<td>J</td>
<td>H</td>
<td>F</td>
<td>B</td>
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<td>_C</td>
<td>_L</td>
<td>AA</td>
<td>J</td>
<td>H</td>
<td>F</td>
<td>B</td>
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</tr>
<tr>
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<td>_C</td>
<td>_L</td>
<td>J</td>
<td>_H</td>
<td>F</td>
<td>B</td>
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</tr>
<tr>
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<td>_L</td>
<td>J</td>
<td>_H</td>
<td>AU</td>
<td>AT</td>
<td>N</td>
<td>D</td>
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<td>S</td>
<td>R</td>
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<td>_C</td>
<td>_L</td>
<td>_W</td>
<td>T</td>
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<td>S</td>
<td>R</td>
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<td>_L</td>
<td>_W</td>
<td>T</td>
<td>X</td>
<td>V</td>
<td>R</td>
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</tr>
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<td>_C</td>
<td>_O</td>
<td>Z</td>
<td>AH</td>
<td>AS</td>
<td>AR</td>
<td>E</td>
<td>B</td>
</tr>
<tr>
<td>Loop 13</td>
<td>_A</td>
<td>_C</td>
<td>_O</td>
<td>Z</td>
<td>AH</td>
<td>AQ</td>
<td>AP</td>
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<td>_C</td>
<td>_O</td>
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<td>AO</td>
<td>AN</td>
<td>AF</td>
<td>U</td>
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<td>C</td>
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<td>Z</td>
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<td>AM</td>
<td>AI</td>
<td>G</td>
<td>R</td>
</tr>
</tbody>
</table>
VRML Example: World problem loop interlocks

Problem E8516: Lack of credit facilities for agricultural producers
VRML Example: World problem loop interlocks

Problem C0805: Underprivileged racial minorities
Netmap transaction analysis
Mode 9: Multi-media, aesthetics

- Multi-media:
  - Beyond text >> Visualization
  - Interactivity

- Sonification
  - Comprehending complex pattern through sound
Mode 10: Mapping complexity plane
Mandelbrot set fractal
(vertical axis=“real”, negative at top; horizontal= “imaginary”)
Comprehensible mapping of complexity

• Search for a “surface” onto which complexity can be mapped
• Challenge of mapping strategic & value dilemmas
• “Real” vs “Imaginary”
• Mapping network of terror (“real” and “imaginary”)
• *Psychosocial Significance of the Mandelbrot Set: a sustainable boundary between chaos and order* (2005)
• *Sustainability through the Dynamics of Strategic Dilemmas: in the light of the coherence and visual form of the Mandelbrot set* (2005)
Mode 11: Spherically configured 3-D structures

- Polyhedra
- Tensegrity (*Syntegration*)
- Virtual reality
- Spherical accounting
VRML Example: Organizations (World Bank system)
Tensegrity in virtual reality
VRML Example: Organizations (EU system)

GIEWS - Global Information and Early Warning System on Food and Agriculture
Vulnerability of marriage as an institution

Discrimination against women

Virtual reality configuration of relationships from World Problems database (see below)
<table>
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<th>Priority</th>
<th>Shape</th>
<th>Colour</th>
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<td>Any</td>
<td>Random</td>
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<td>Any</td>
<td>Random</td>
</tr>
</tbody>
</table>
Mode 12: Transformable structures, morphable images

- Vector equilibrium ("Jitterbug")
- Morphable images
Resonance hybrids: key to future sustainability?
“Dodecameral” integration
Transformations of vector equilibrium
UIA Links

Anthony Judge:
Email: Anthony.Judge@gmail.com
Web: http://www.laetusinpraesens.org
This presentation:
http://www.laetusinpraesens.org/docs00s/untelos2.pdf
Associated text (and references):
http://www.laetusinpraesens.org/musings/untelos.php

UIA home page
http://www.uia.org/
Online database access
http://www.uia.org/data.htm
Some related texts

- Animating the Representation of Europe (2004)
- Spherical Accounting: using geometry to embody developmental integrity (2004)
- Simulating a Global Brain: using networks of international organizations, world problems, strategies, and values (2001)
- Coherent Policy-making Beyond the Information Barrier (1999)
- From Information Highways to Songlines of the Noosphere: Global configuration of hypertext pathways for meaningful collective transformation (1996)
- Aesthetics of Governance in the Year 2490 (1990)