

Exploring Intelligible Associations

Ontological and process issues

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

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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

Global values ?

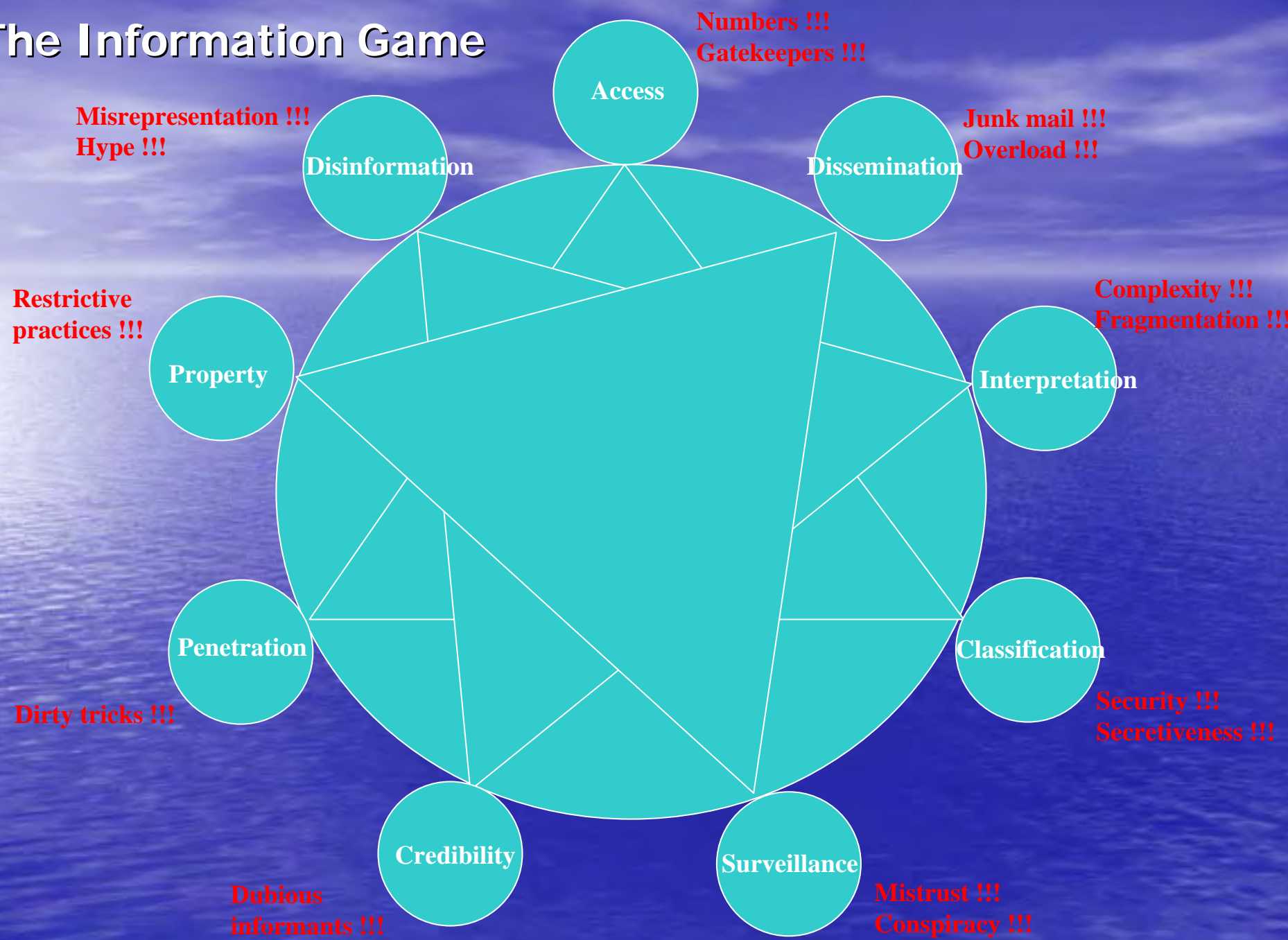
- Whose values?
 - whose values are recognized?
 - whose values are neglected?
 - what meaning do they have locally?
- Who designs the system of global values?
 - how are the values related?
- Who imposes the values?
 - what of alternative values?
 - and those who disagree?
- How do new values emerge...for the future?

4. Policy challenges of the emergent knowledge society

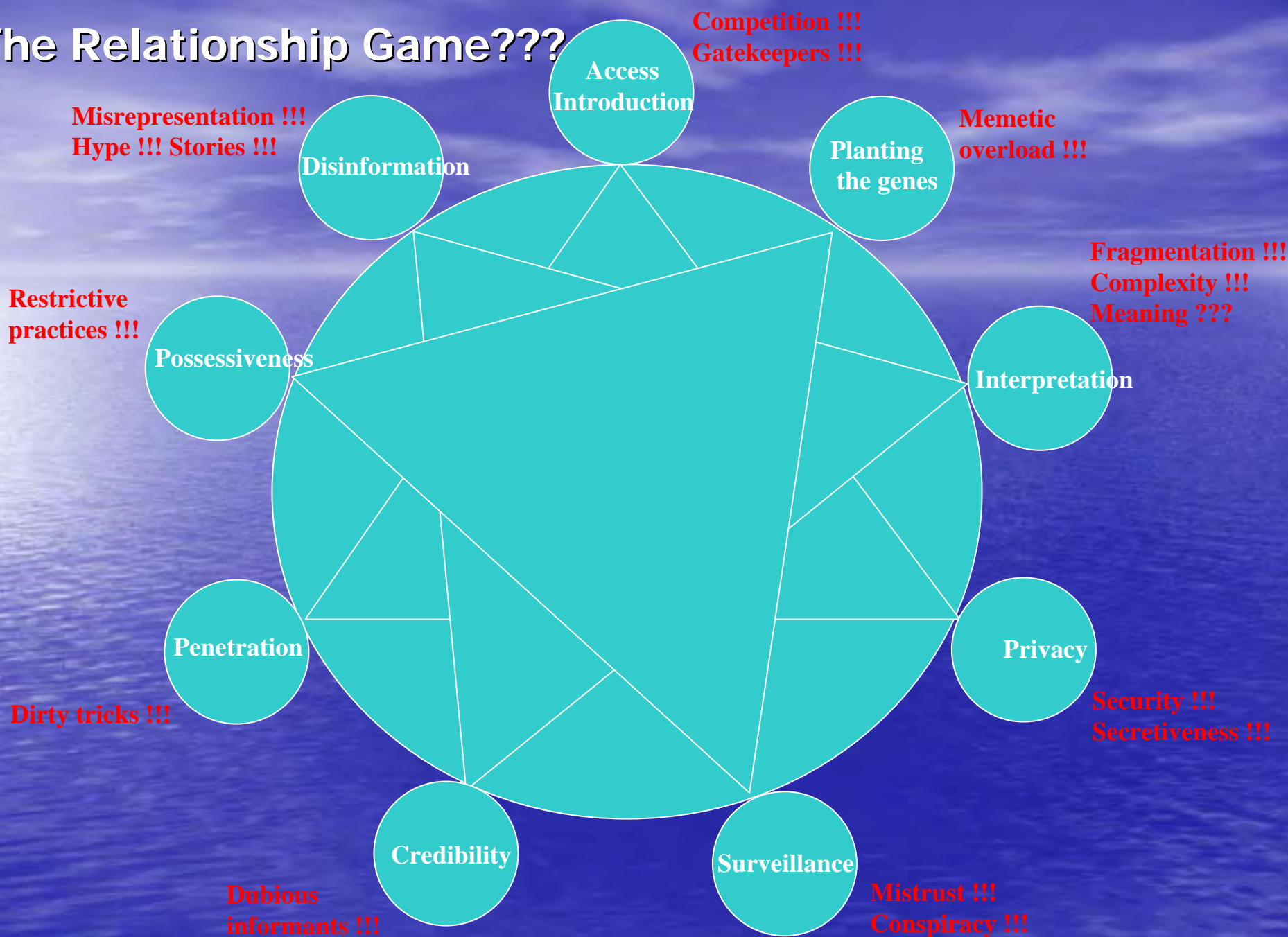
Information overload & underuse

- 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



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

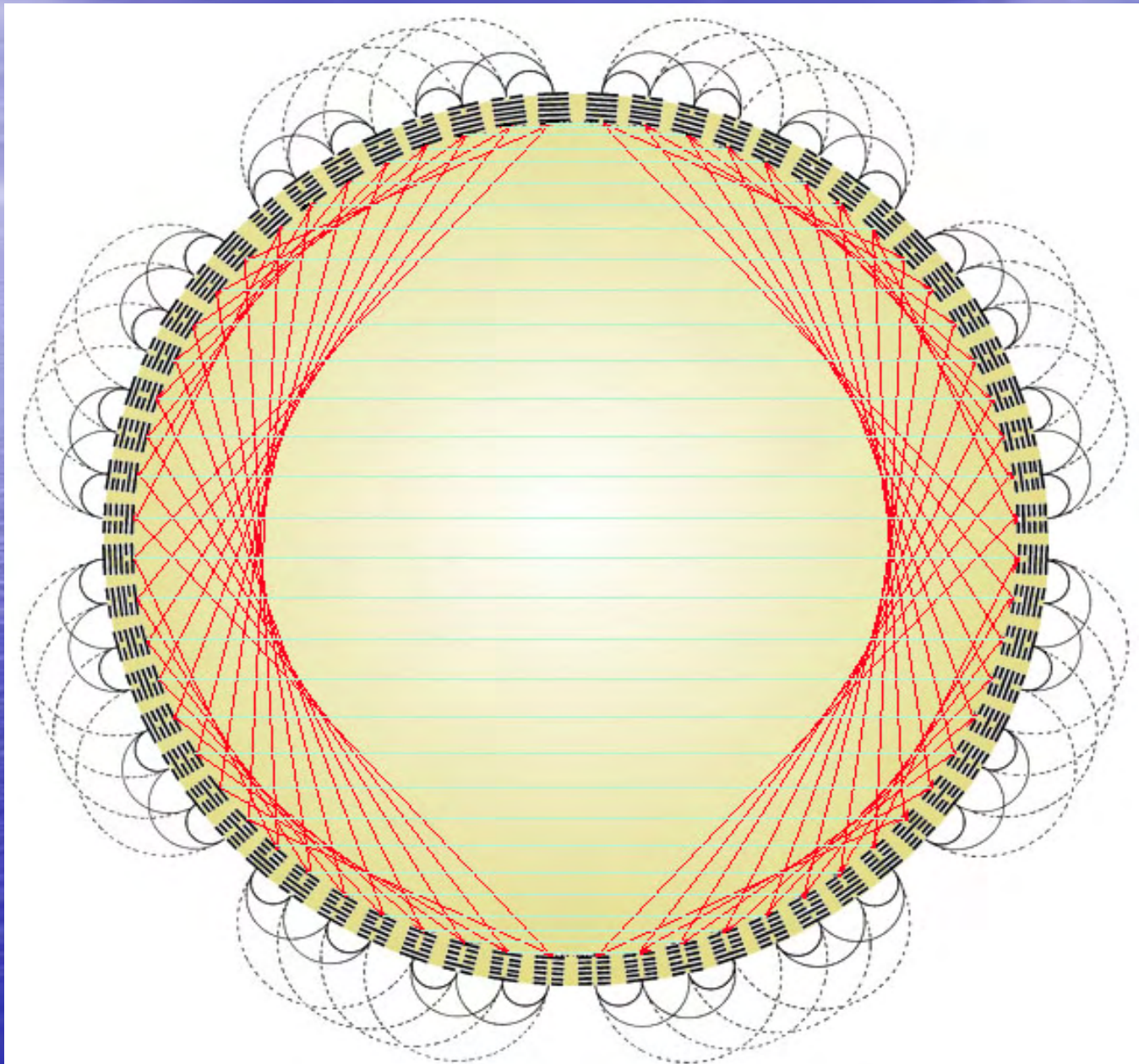
6. Integrative modes and metaphors: “ways of knowing”

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

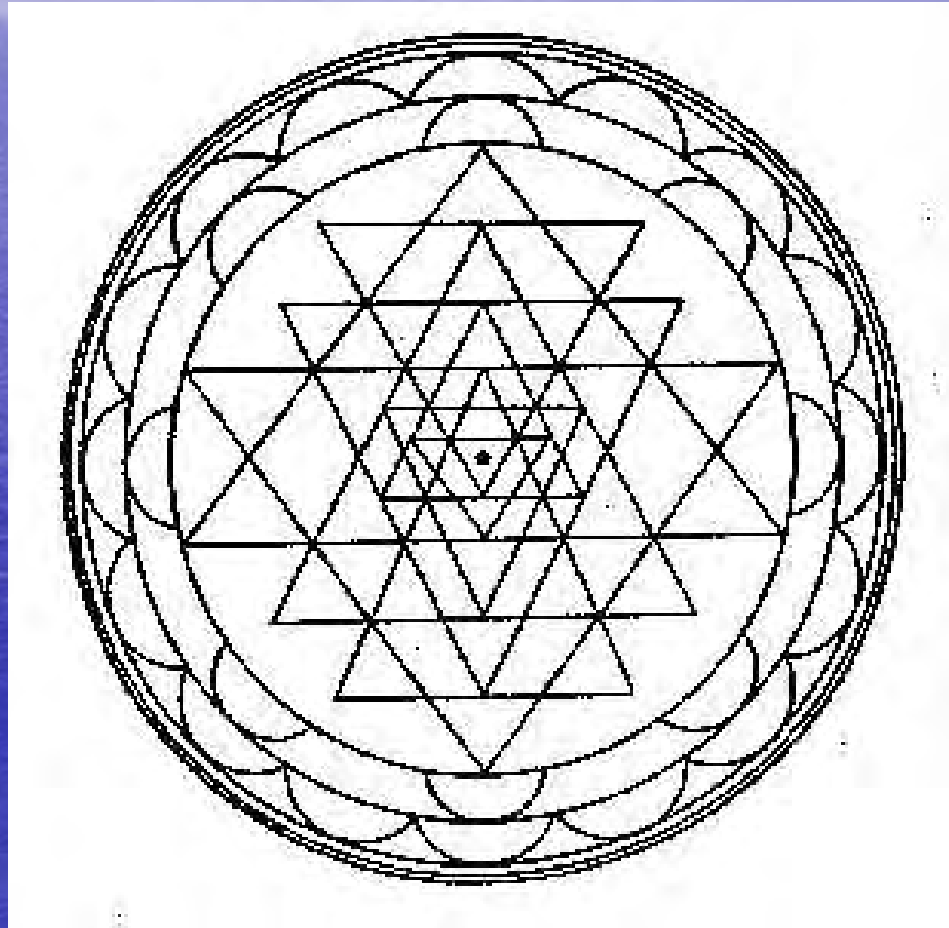
Mode 1: Traditional symbol systems



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 !!!)

Databases

Animals

Problems

Strategies

Organizations

Plants

Protected Habitats

Context Information

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Economic Issues

Biodiversity

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Countries

Conventions / Treaties

Subject Information

Summary

Partners

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Polynx Movie

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Feedback

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](#) ringsLinks 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](#) |

Databases

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Problems
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Context Information

Bibliography

Thematic Issues

Biodiversity
Problems
Strategies
Organizations
Conventions

Conservation
Sustainability

Hotspots

Hotspots
Policy
Organizations
Countries
Conventions / Treaties

Subject Information

Summary
Partners
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FeedbackDatabase selected: **World Problems - Issues** (?)

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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](#)

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23 Item(s) found for keyword(s): **FORESTS**

Sort order requested: **None**

Selection below: **Unrestricted**. User is: **Anthony Judge**

Page: **1** (no more pages) [\[New Search\]](#) [\[With alternative titles\]](#) [\[Without analysis\]](#) [\[Tree structure\]](#) [\[Map\]](#)

	t	c	k	x	h	f	l	o	s	u	r	w	Entry first title / name	
C	**	11	68	=	<	>	378		S	V	R		Deforestation	
C	*	4	36	=	<	>			S	V	R		Endangered forests	
C		7	30	_		_	<	>	30		S	V	R	W Forest decline
D		9	37	=	<	>			S		R		Unsustainable development of forest lands	
D	*	9	36	=	<	>	34		S	V	R		W Tropical deforestation	
D		5	36	=	<	>	3		S				Unethical practices in forestry	
D		1	12	=	>				S	V			Threatened alluvial forests habitats	
E		3	19	=	<	>	24		S				Misuse of tropical rain forests for agricultural development	
E		1	13	_		_		>		S	V	R	Inundation of forests through dams	
G		0	4	_		_	--				V		Threatened montane tropical forest habitats	
D		1	10	=		>				O		V	Threatened cool temperate wet forest habitats	
E		2	3	_		_	--						Illegal forest clearance	
E		4	17	_		_	<	>		S	V		Logging of old stand forests	
D		1	8	_		_	--			S	V		W Threatened tropical dry forest habitats	
E		0	4	_		_	--				V		Threatened forested peatland habitats	
D		0	7	_		_	--			S	V		Threatened warm temperate moist forest habitats	
F		1	14	_		_	<	>		S	V	R	Undervaluation of forests	
E		0	4	_		_	--				V		Threatened serpentine forest habitats	
G		0	7	_		_		>			V		Threatened habitats of tall, dense needle-leaf conifer forests	
D		0	1	_		_	--						Threatened subtropical and temperate rain forests or woodlands biome	
D		0	2	_		_	--						Threatened temperate needle-leaf forests or woodlands biome	
D		0	3	=	--								Threatened evergreen sclerophyllous forests, scrubs or woodlands biome	

Exploring Intelligible Associations

Ontological and process issues

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

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(*Saarland University, Saarbrücken*)

Mode 3: 2-D Matrices

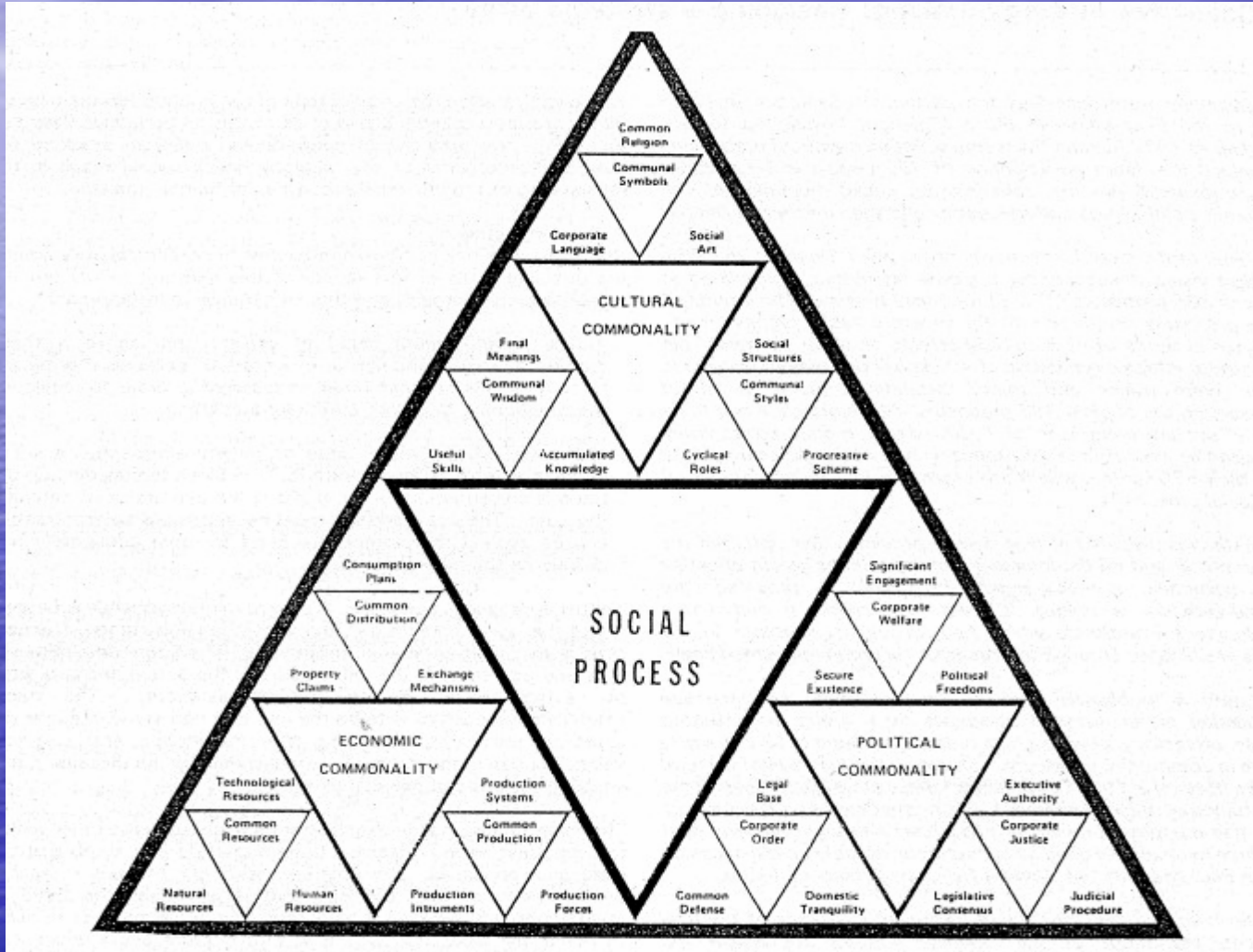
- 4-cell (Wilber quadrants)
- Input-Output diagrams (resources, accounting)
- N-cell (Int. Concept Classification)
- N-cell (UIA Functional classification)

UIA Functional classification matrix

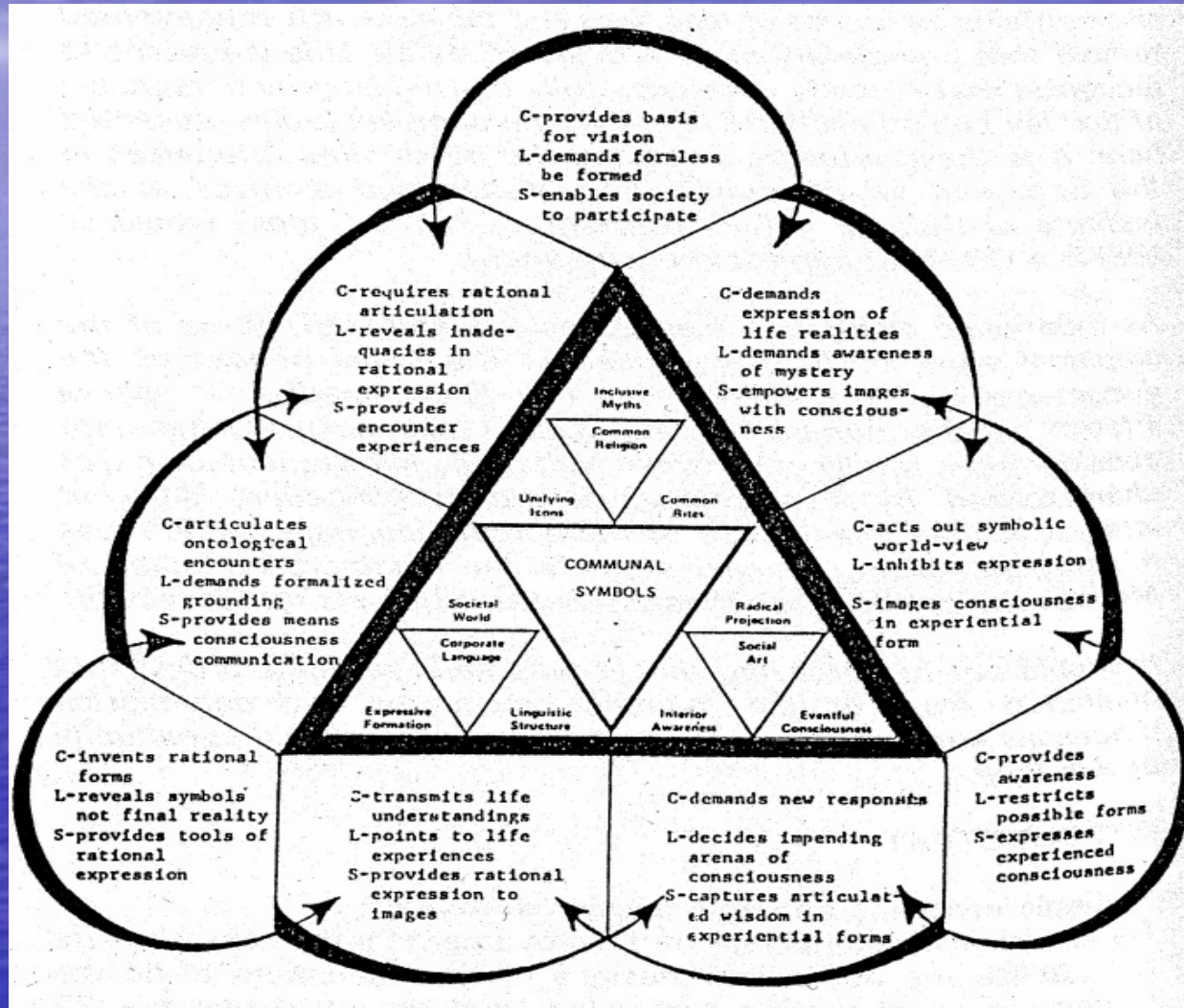
	0	1	2	3	4	5	6	7	8	9
9	Consciousness 90	Leadership (Authenticity) 91	Love (Compassion) 92	Comprehension 93	Creative expression 94	Vigilance (Courage) 95	Transcendence (Detachment) 96	Freedom (Liberation) 97	Perseverance 98	Oneness (Universality) 99
8	Principles 80	Purpose 81	Solidarity (Cooperation) 82	Idealism 83	Harmony 84	Integration 85	Meaning 86	Sharing 87	Resourcefulness (Inventiveness) 88	Equanimity 89
7	Innovative change 70	Logics 71	Emotional fulfilment 72	Philosophy 73	Aesthetics 74	Security 75	Morals, ethics 76	Community 77	Convolution 78	Peace (Justice) 79
6	Development 60	Policy making (Futurology) 61	62	Language 63	Design 64	Inter- disciplinarity 65	Individuation, psycho-analysis 66	Co-operative 67	Invention 68	Conservation 69
5	Noosphere 50	Science 51	Experiential activities 52	History 53	Culture 54	Strategy, logistics 55	Theology 56	Metapolitics 57	Agroscience 58	International relations 59
4	40	Sociology 41	Management 42	Informatics, classification 43	Ekistics (Architecture) 44	Cybernetics (Systems) 45	Psychology (Behaviour) 46	Economics 47	Technology 48	Environment 49
3	30	Research, standards 31	Health care 32	Education 33	Recreation (Arts, sports) 34	Defence (Police) 35	Religious practice 36	Government, politics 37	Agriculture, fisheries 38	Law 39
2	Action 20	Society 21	Social activity (Employment) 22	Information (Documentation) 23	Amenities (Necessities) 24	Transportation, telecommun. 25	Communication (Media) 26	Commerce (Finance) 27	Industry (Production) 28	Societal problems 29
1	Life 10	Biosciences 11	Plant Life 12	Zoology 13	Invertebrates 14	Fish, reptiles 15	Birds, mammals 16	Mankind 17	Medicine 18	Geography (Ecology) 19
0	Fundamental sciences 00	Astronomy 01	Earth 02	Meteorology 03	Climatology 04	Oceanography 05	Hydrology 06	Geophysics 07	Geology 08	Resources (Energy) 09

Mode 4: Triangular mapping

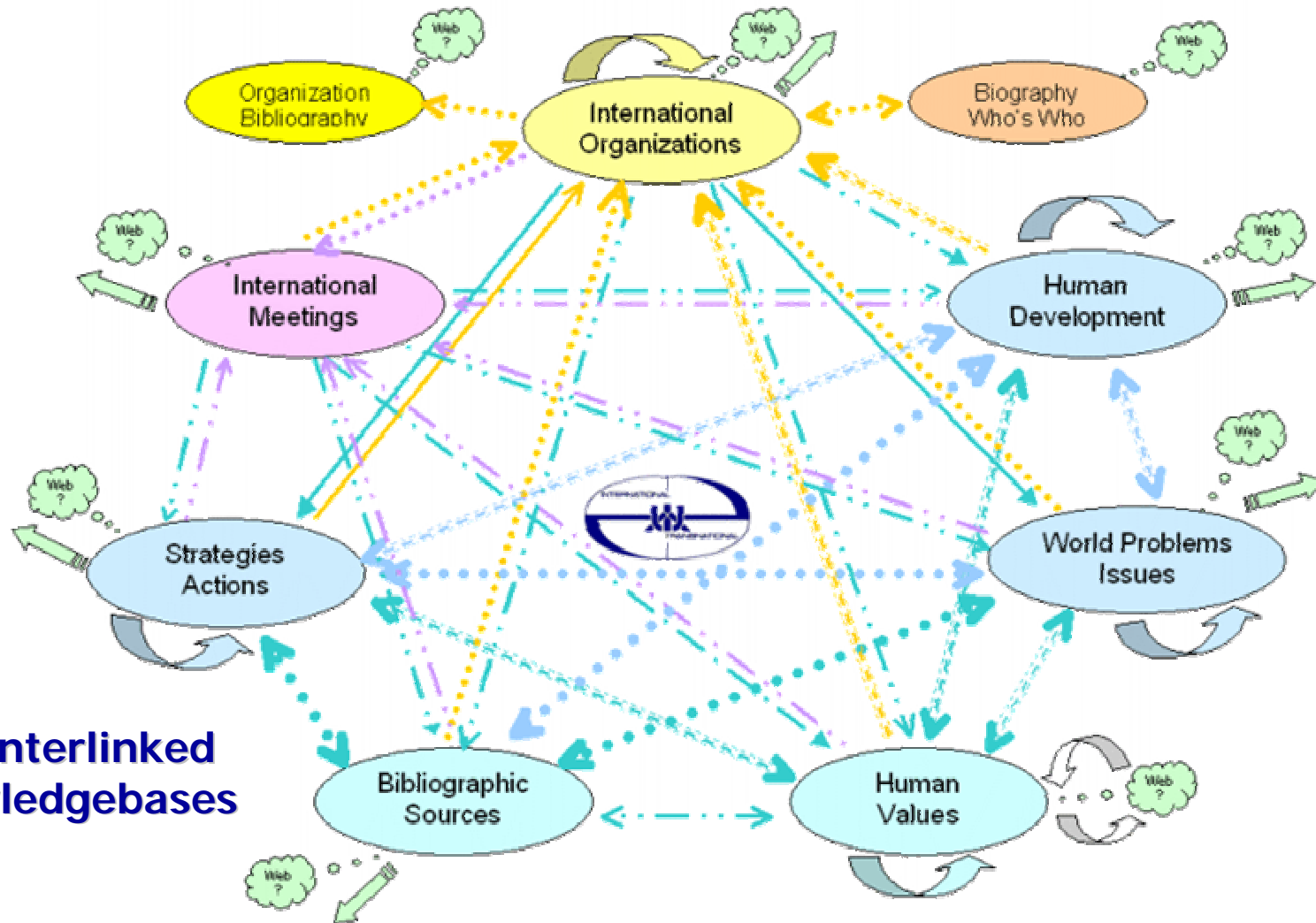
ICA Social process triangles framework



Triangular relationships

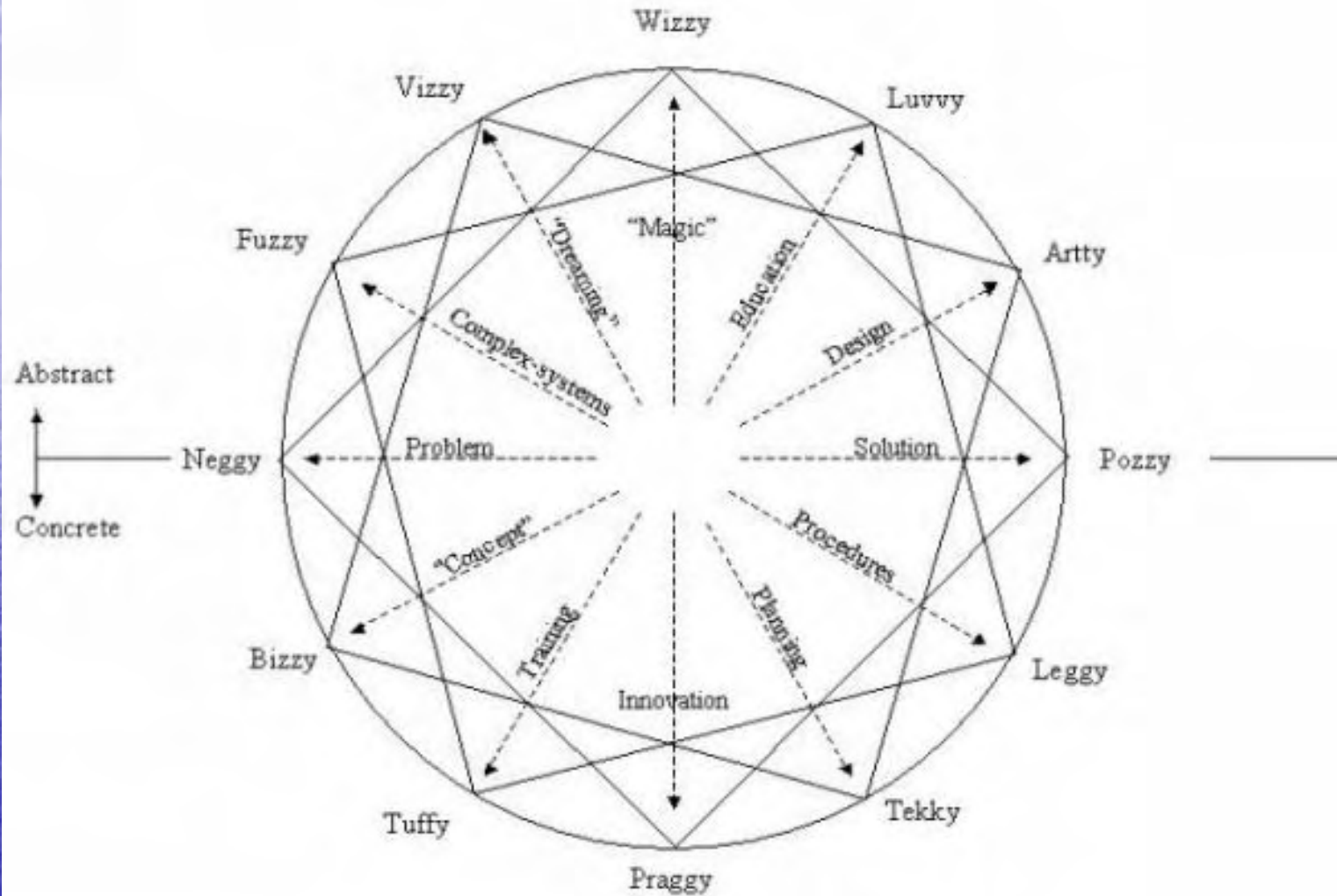


Mode 5: Complementarity diagrams ("correspondences")



**UIA Interlinked
knowledgebases**

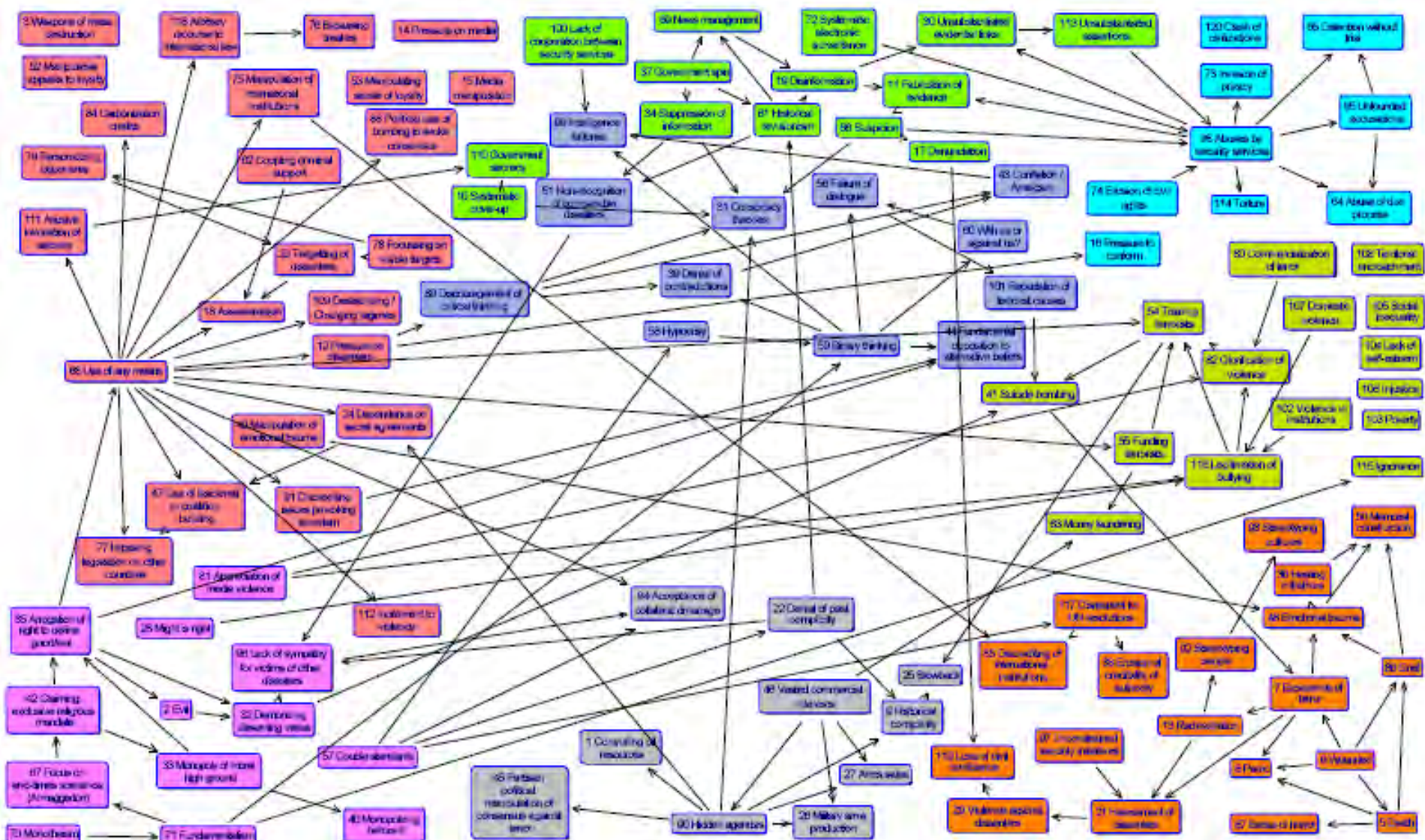
12 Languages of governance



Mode 6: Network mapping

- Static maps
- Self-organizing network (“spring”) maps
- Touchgraph
- Decision Explorer

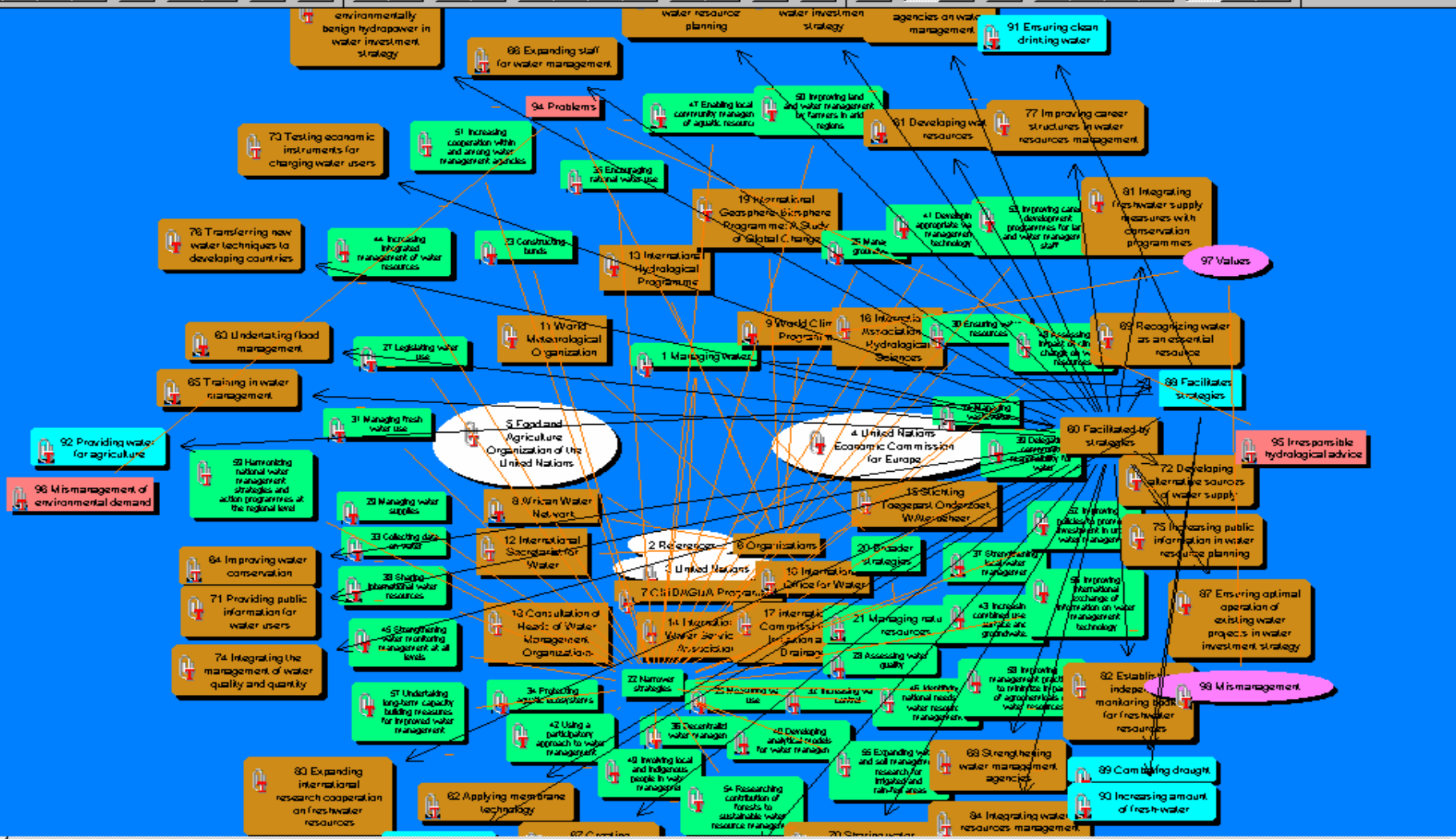
Knowledge organization relating to terror



Strategic Decision Explorer

managing_water2 - View 1 - Banxia Decision Explorer

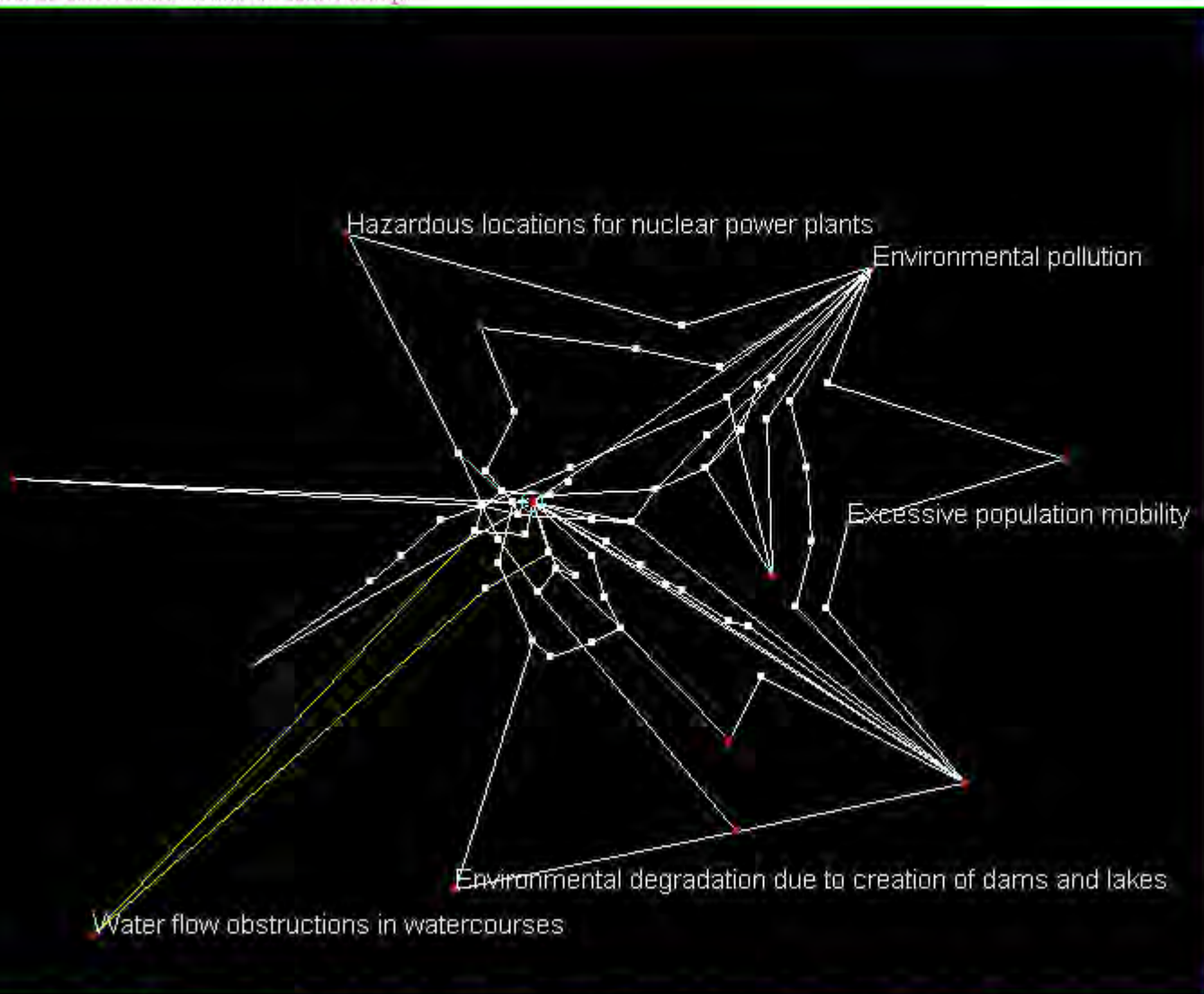
File Edit Property View List Analysis Control Window Help



ks type: **Aggravates problems for Deforestation.**

s 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](#).



Controls

Font+ Font-

Randomize

- Show Arrows
- Thick Lines
- Show Link Types
- Show Icons
- Play Sounds
- Freeze
- Reverse Text

Toggle Background

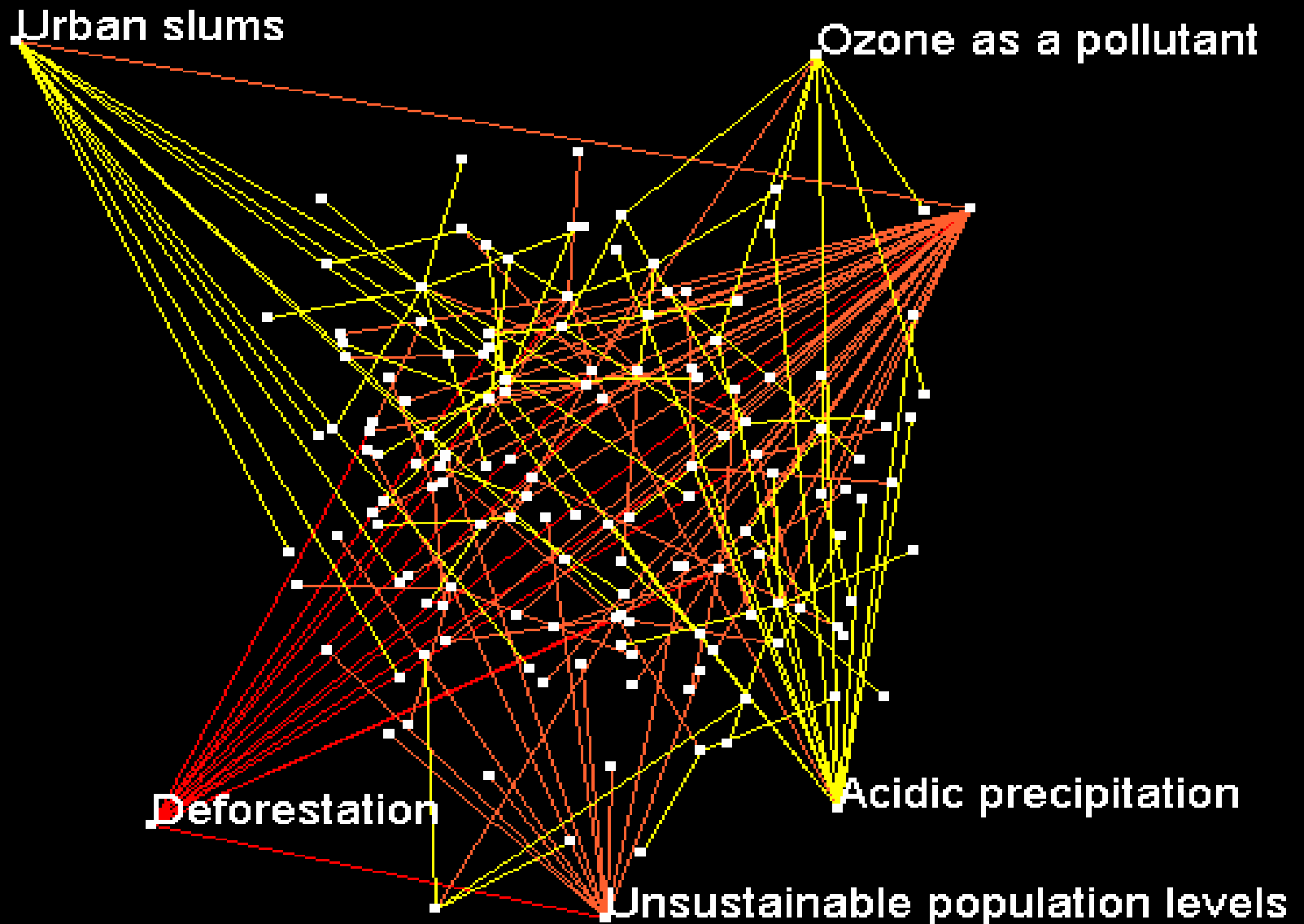


- SCALE *

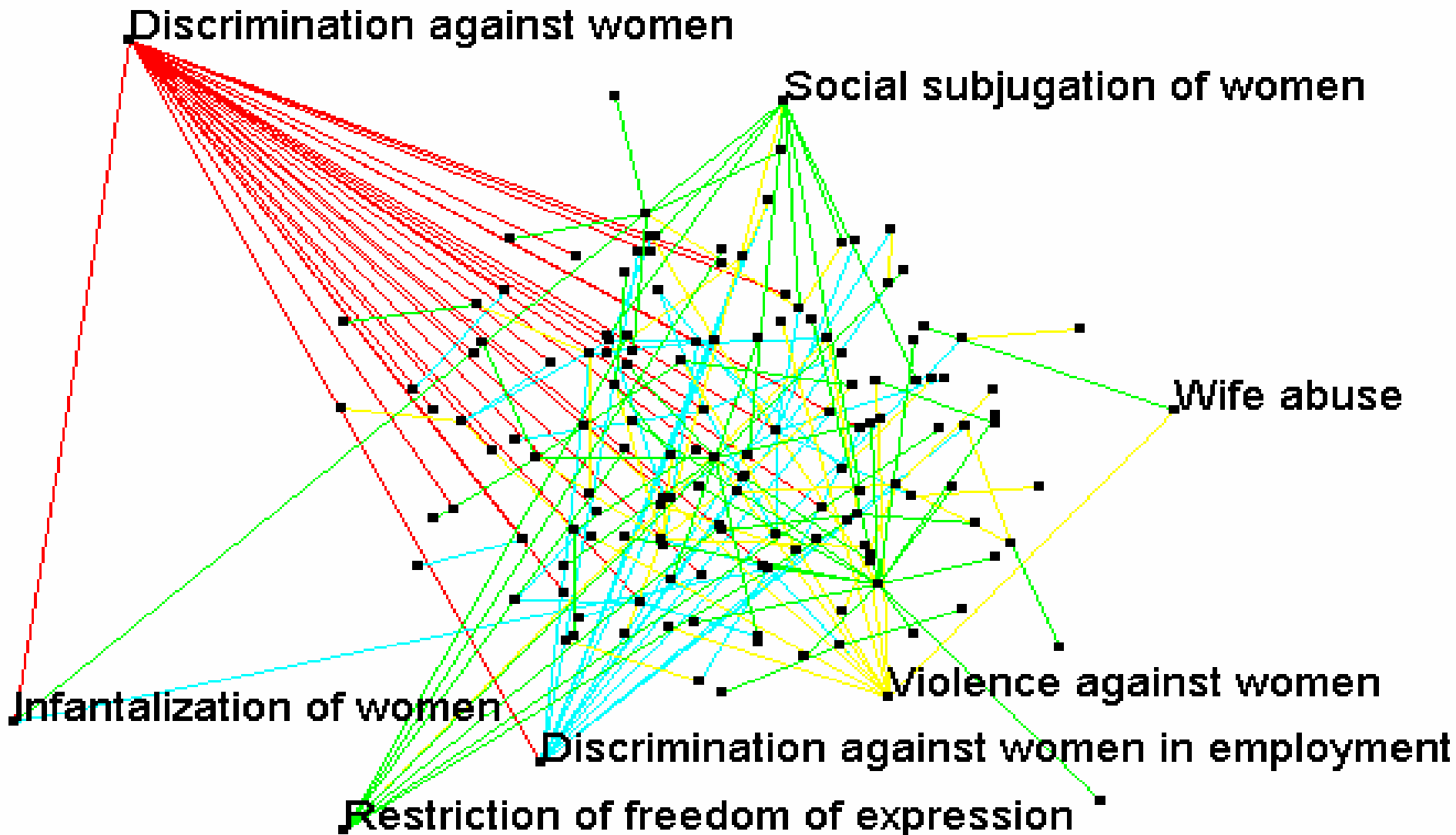
>> to Controls

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 !

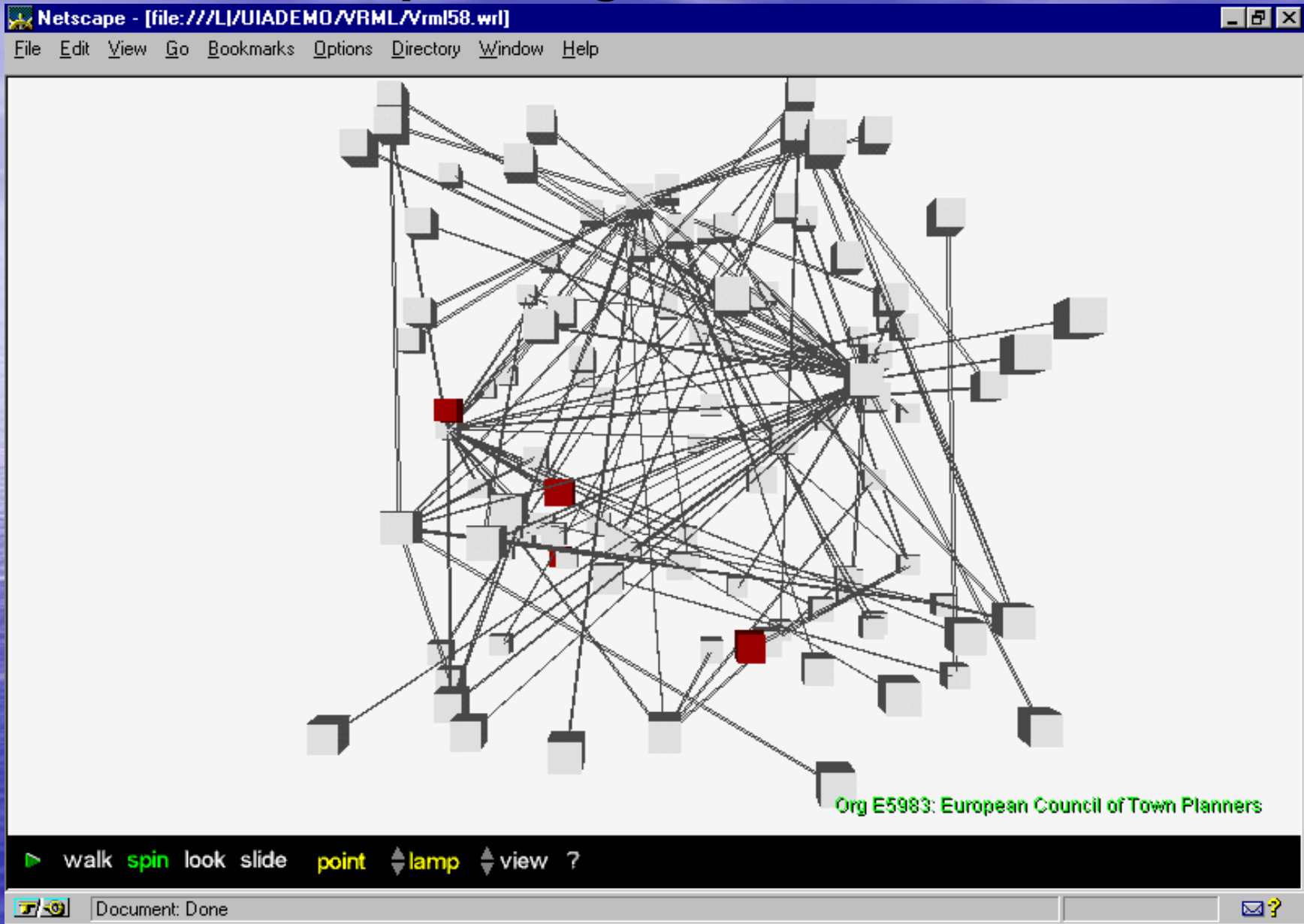
Conference mind-mapping



Conference mind-mapping

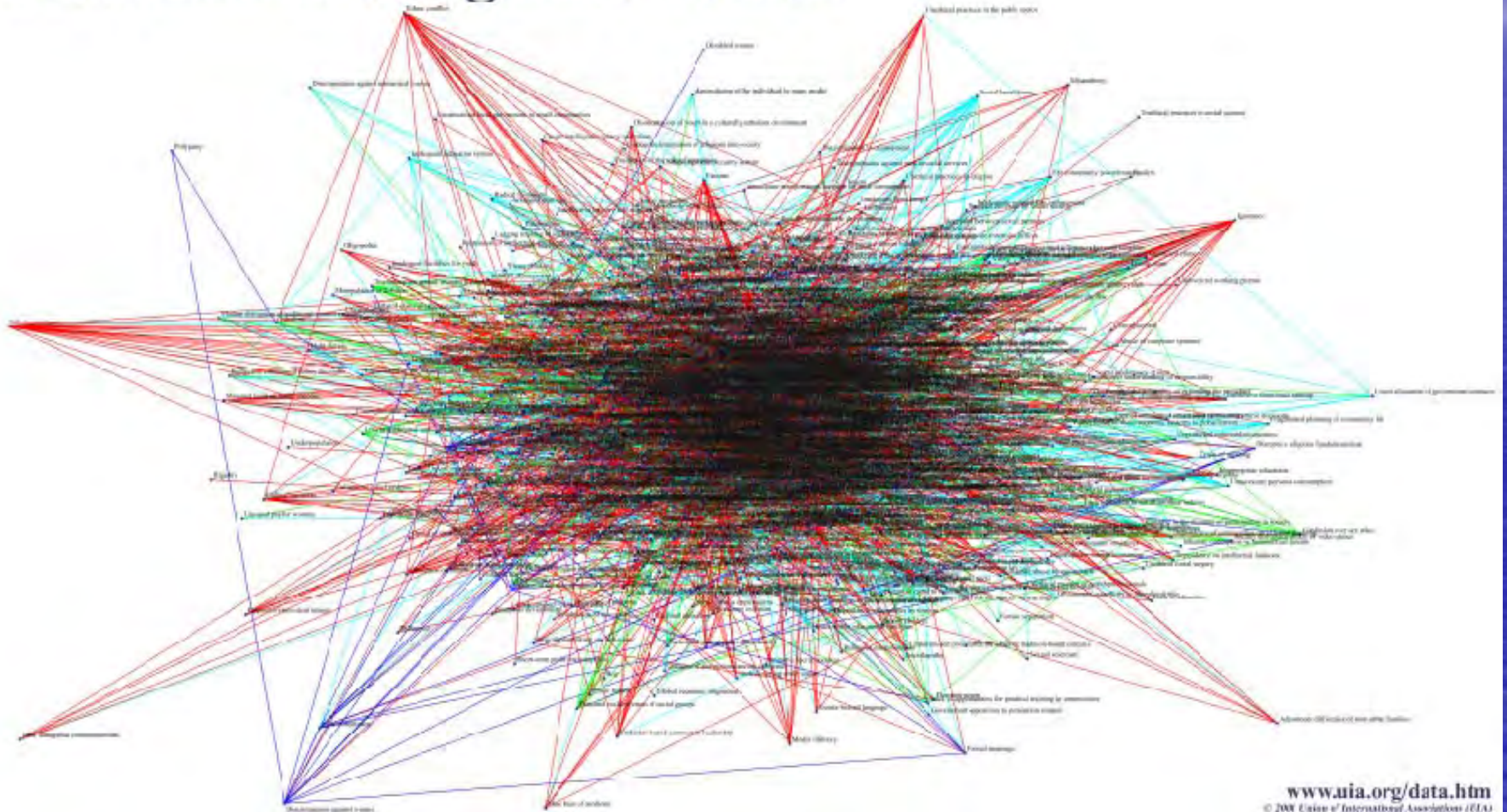


VRML Example: Organizations - network

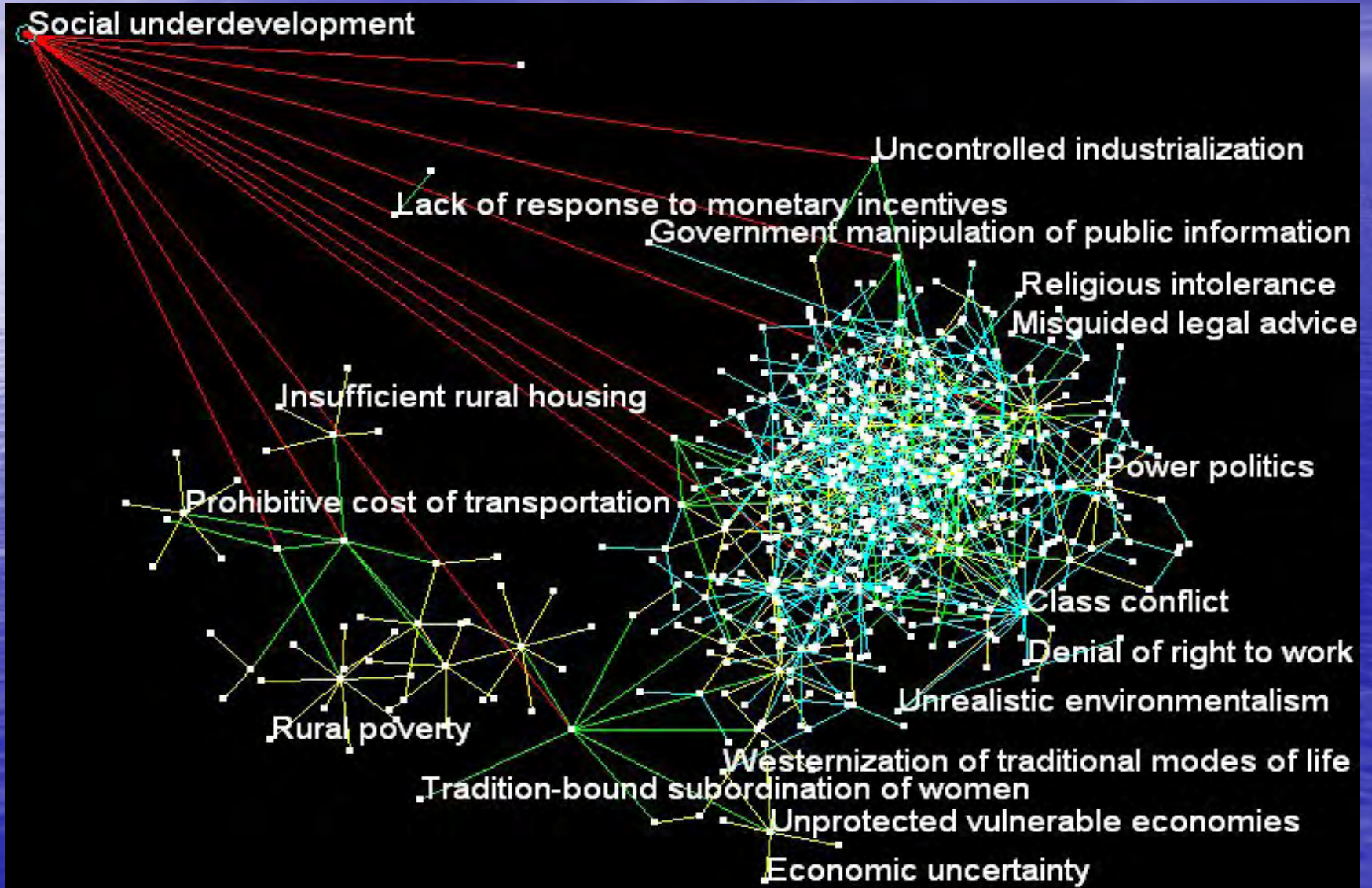


Scalable vector graphics

Discrimination against women



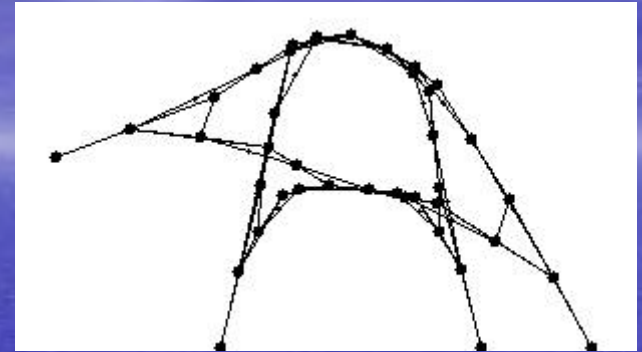
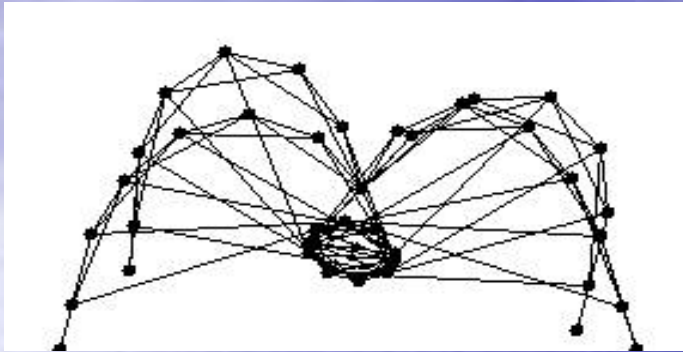
Network spring map



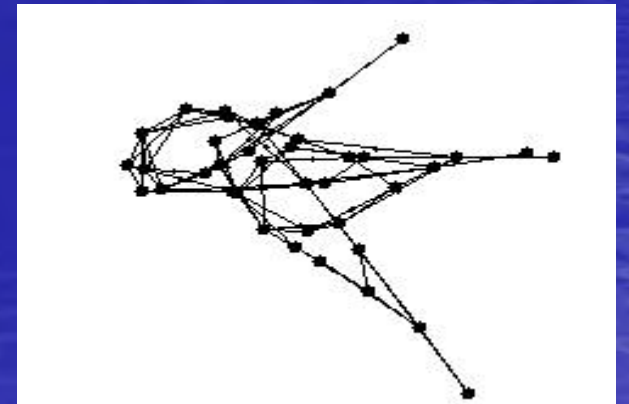
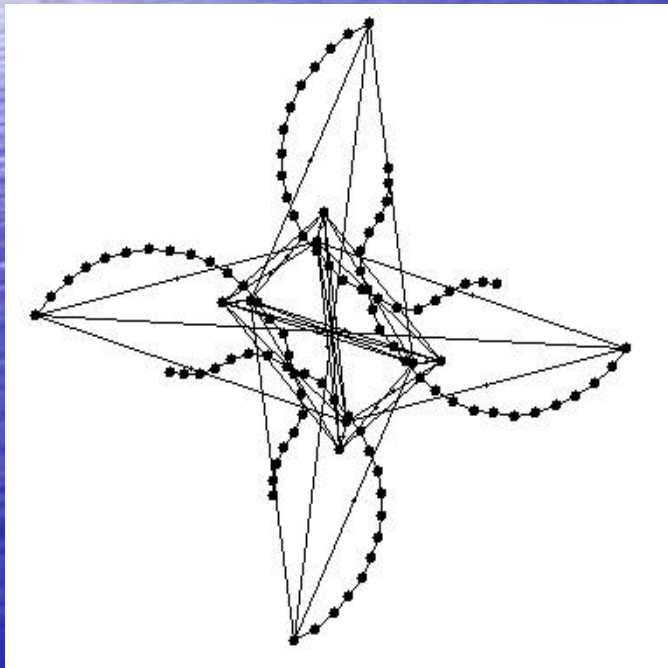
Mode 7: Models, simulations, interactive games

- Economic models
- *Limits to Growth*
- World modelling
- World building games

Interactive modelling: *Soda constructor*



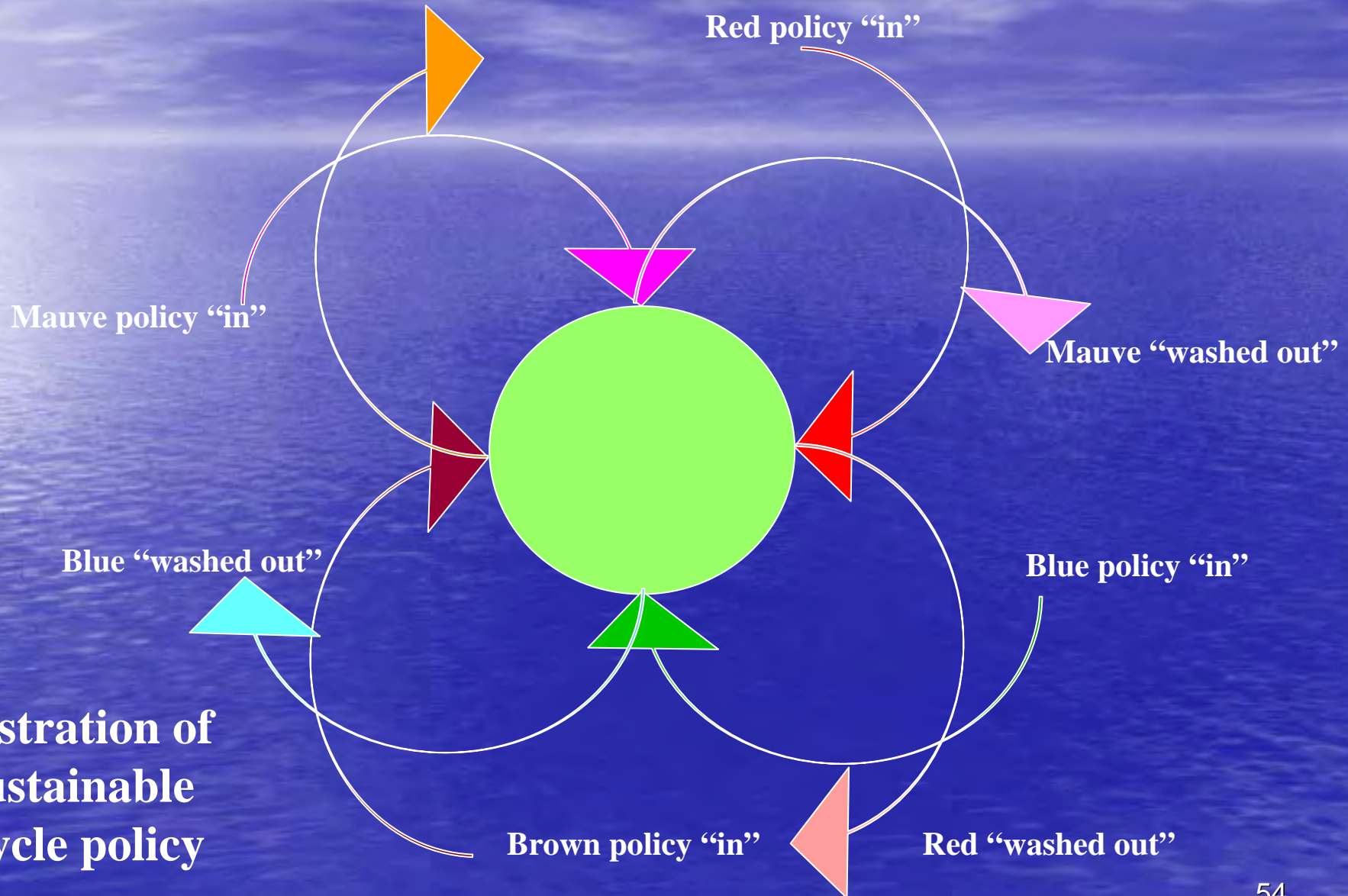
<http://sodaplay.com/constructor/player.htm?>



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

Date	1995	1999	1999	2000	2000
Chains	9,519,722	15,000,000	46,474,882	16,091,877	1,239,769,768
Profiles	-	-	6,891	1,217	12,397
4-Loop	115	-	-	-	230
5-Loop	527	-	-	-	473
6-Loop	3,058	-	-	-	1,163
7-Loop	3,568	-	-	-	3,473
8-Loop	excluded	excluded	excluded	excluded	10,600
9-Loop	excluded	excluded	excluded	excluded	35,438
Total	7,303	6,000	15,958	8,253	51,555

Deforestation

[by Search](#) [[Loop list](#)] [[Alt.loop list](#)] [[Alt.loop pattern](#)] [[Loop map](#)]

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

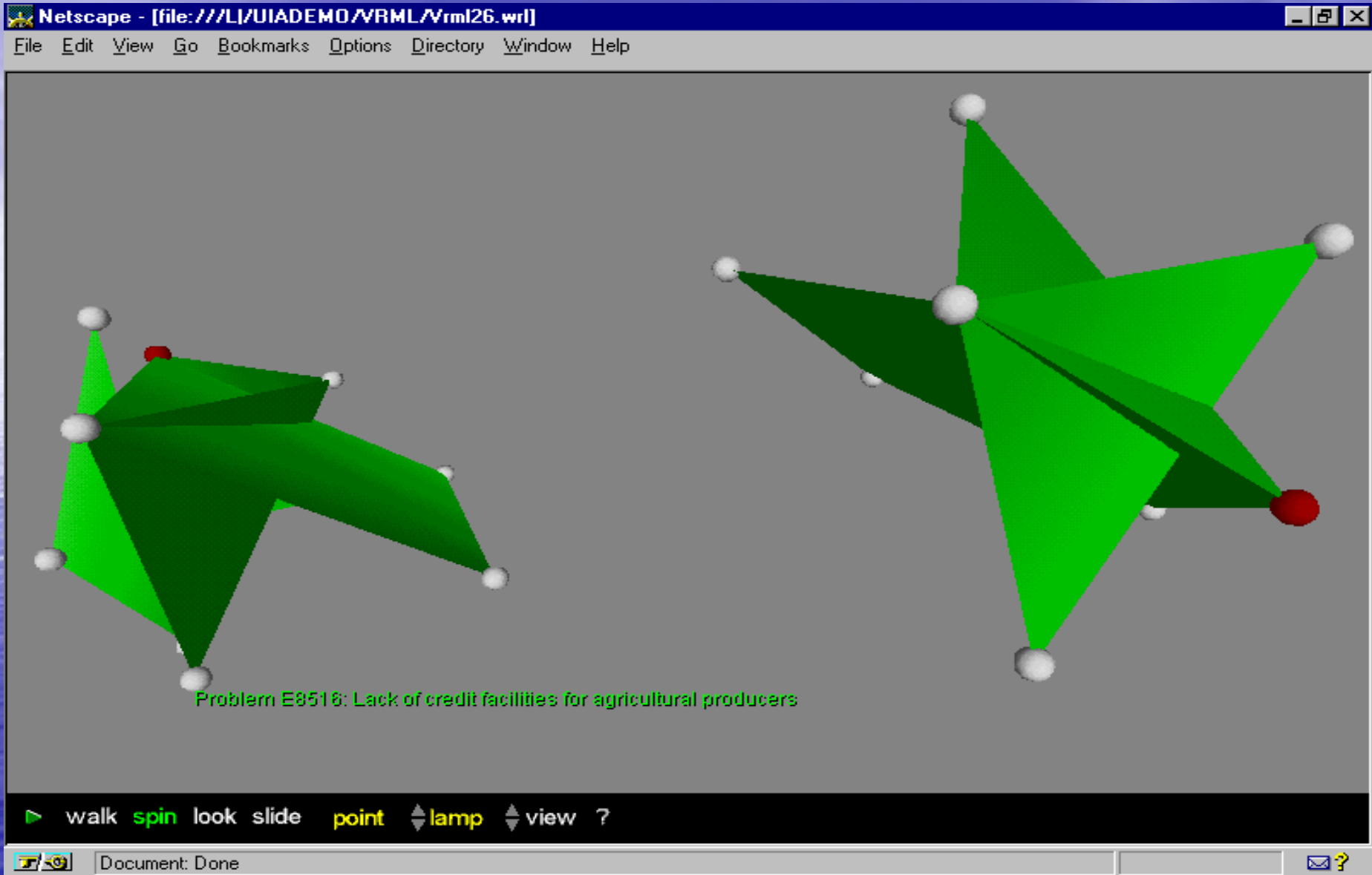
Table 1 shows chain of impacts (presented [elsewhere](#) as a nested loop list). **Max. number of loops currently listed= 15 (of 49).**

- 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 on those in first column.
- The pattern is helpful in highlighting questionable links and errors.

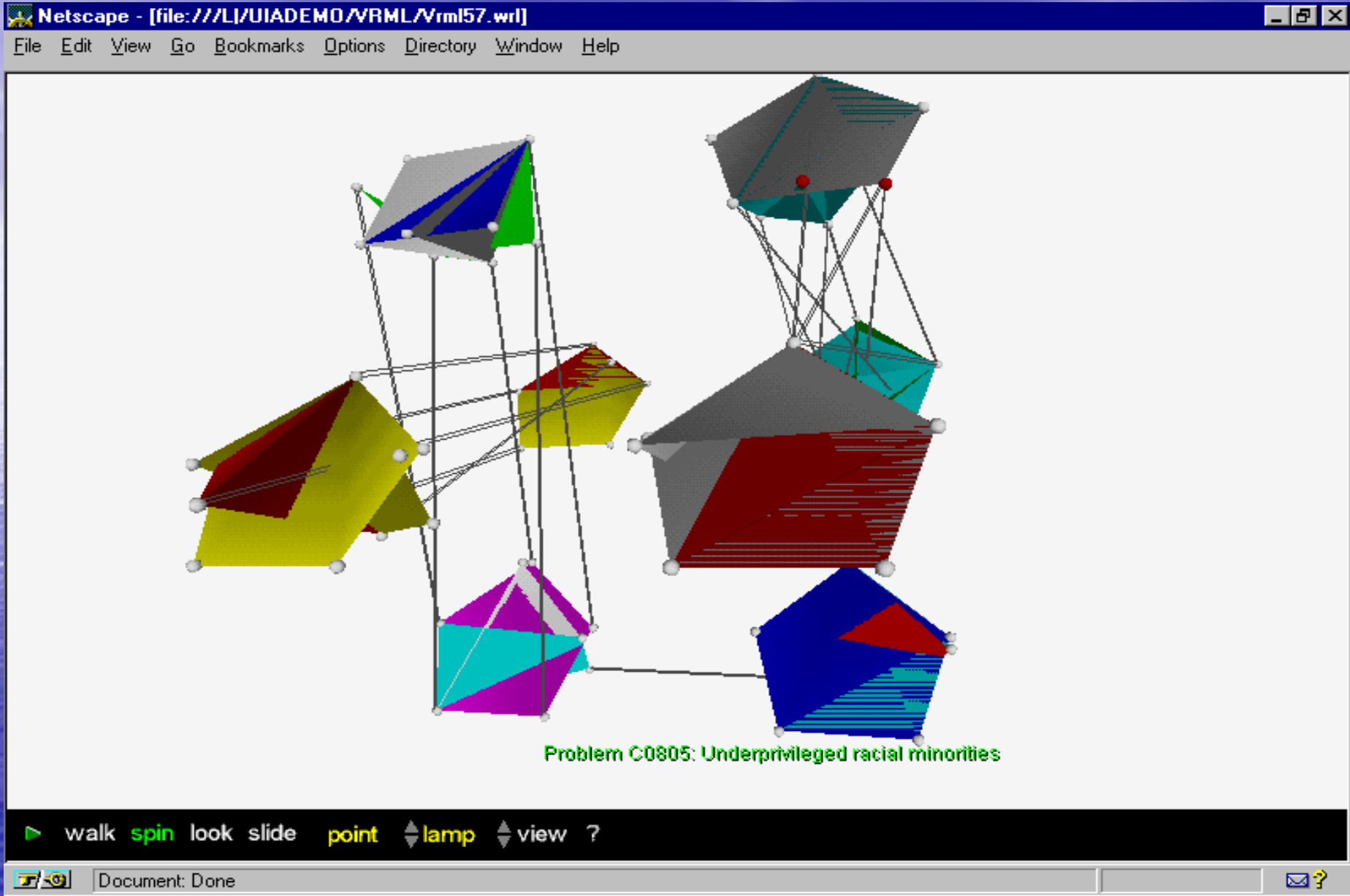
Table 2 gives names of problems in cells of Table 1. Click on any links in Table 2 to access profile (from which other types of information can be requested) or click to the [alternative presentation](#) to get an overview for problems that **Deforestation** is **aggravated by**.

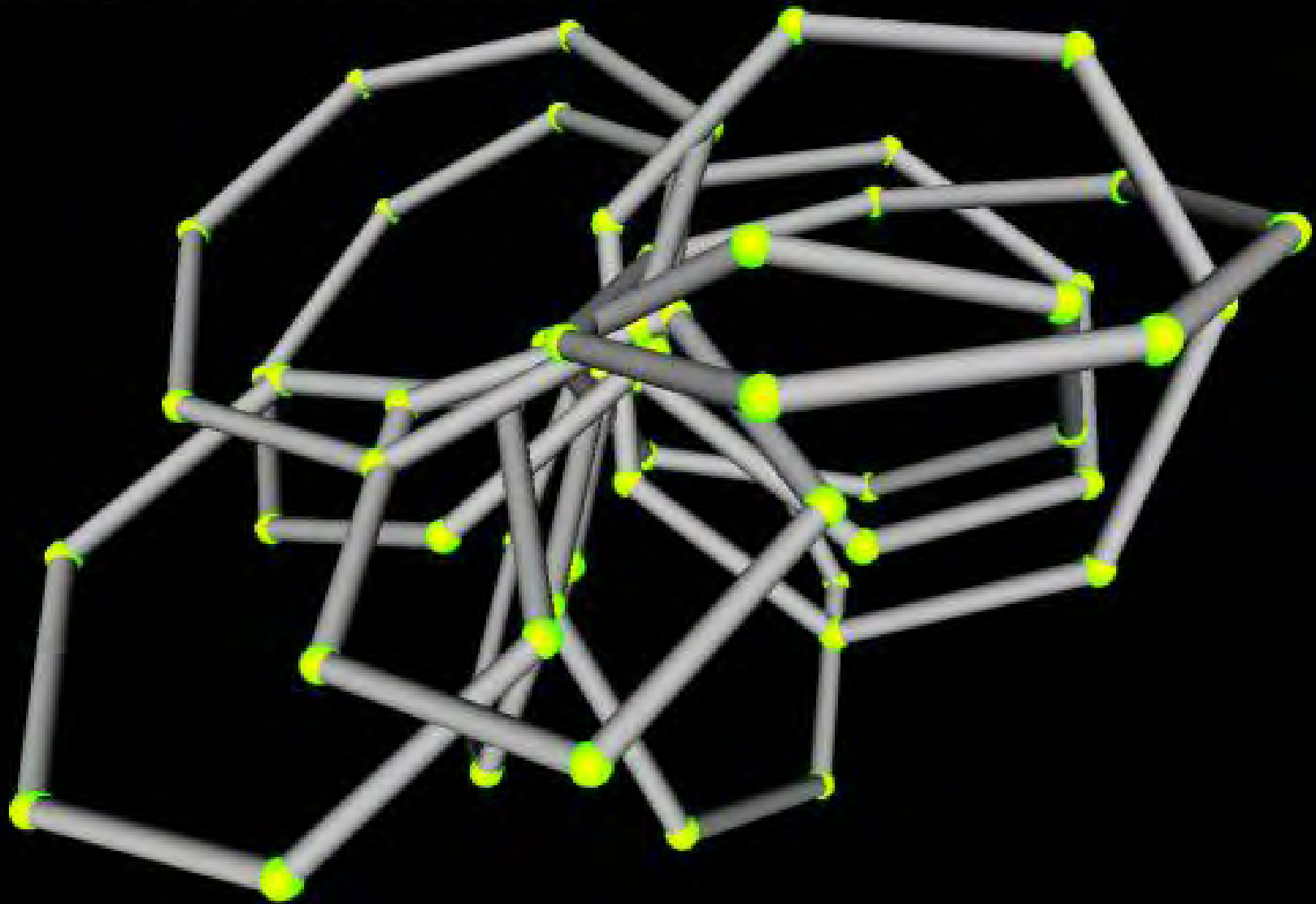
Table 1									
Loop 1	_A	AV	AC	AB	AE	_Q	_P	_K	_M
Loop 2	_A	AC	AB	AE	_Q	_P	_K	_M	
Loop 3	_A	AC	AB	AK	AE	_Q	_P	_K	_M
Loop 4	_A	AC	AB	AK	_Y	_Q	_P	_K	_M
Loop 5	_A	_C	_L	AJ	_J	_H	_F	_B	
Loop 6	_A	_C	_L	AA	_J	_H	_F	_B	
Loop 7	_A	_C	_L	_J	_H	_F	_B		
Loop 8	_A	_C	_L	_J	_H	AU	AT	_N	_D
Loop 9	_A	_C	_L	_	_W	_T	_S	_R	
Loop 10	_A	_C	_L	_	_W	_T	AI	_S	_R
Loop 11	_A	_C	_L	_	_W	_T	_X	_V	_B
Loop 12	_A	_C	_O	_Z	AH	AS	AR	_E	_B
Loop 13	_A	_C	_O	_Z	AH	AQ	AP	AD	_I
Loop 14	_A	_C	_O	_Z	AG	AO	AN	AF	_U
Loop 15	A	C	O	Z	AG	AM	AL	G	B

VRML Example: World problem loop interlocks

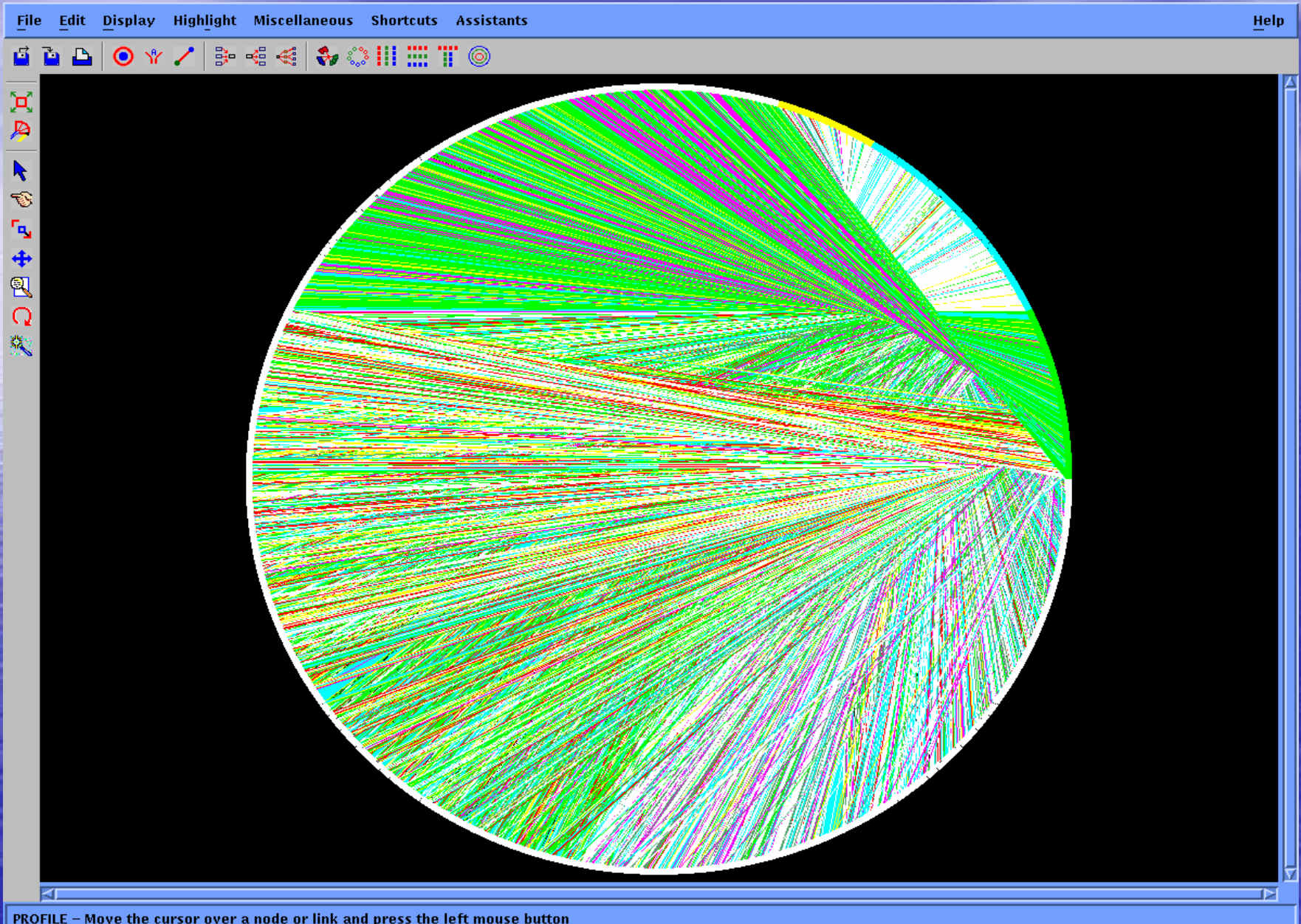


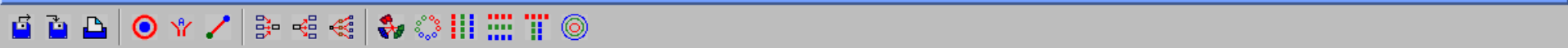
VRML Example: World problem loop interlocks





Netmap transaction analysis





A large, dense, multi-colored grid of lines, possibly representing a complex data visualization or a corrupted document. The lines are thin and intersect to form a complex pattern. The colors include cyan, green, yellow, and magenta. The grid is tilted and appears to be a 3D projection of a 2D plane.

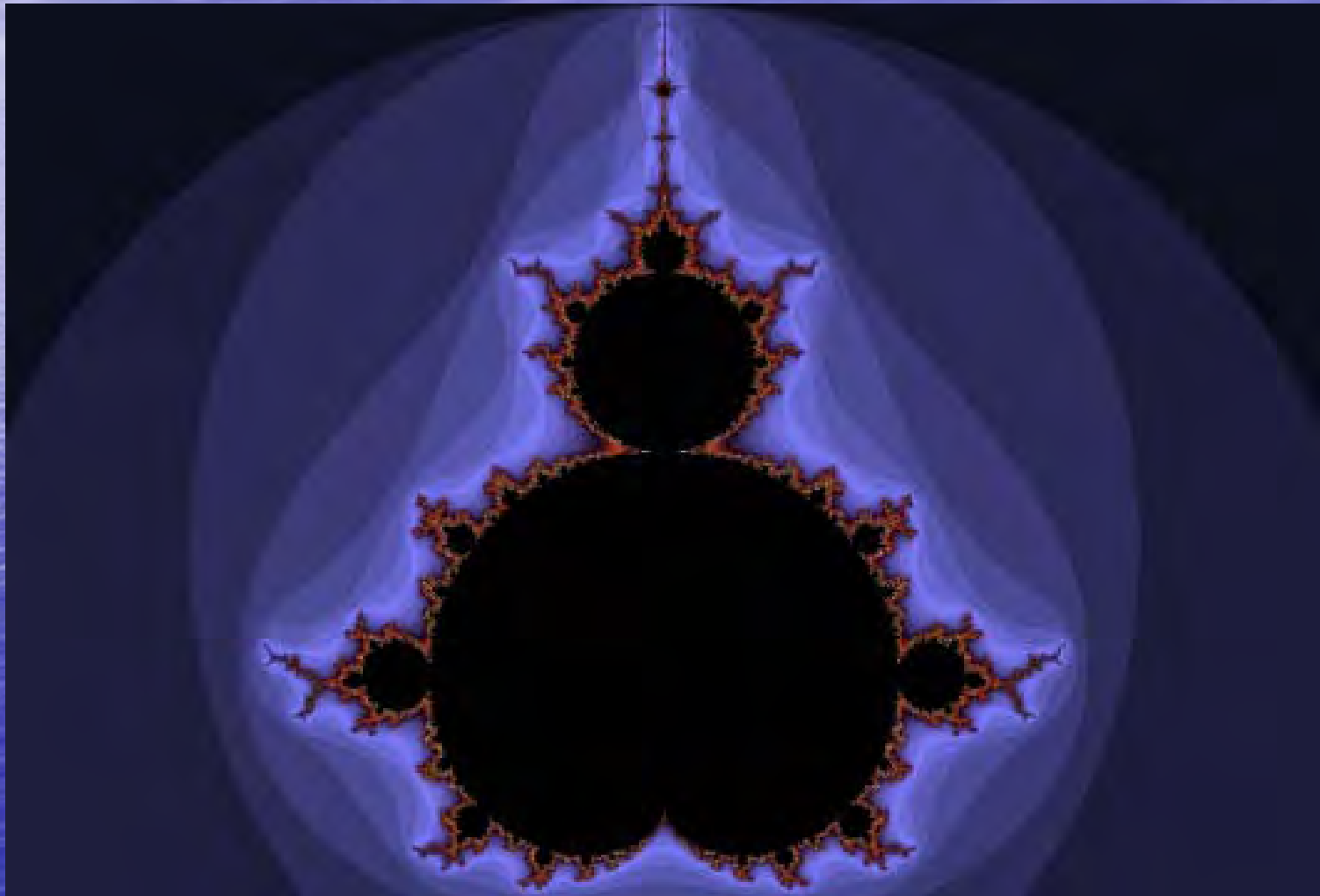
Mode 9: Multi-media, aesthetics

- 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”)
- *Psycho-social 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)

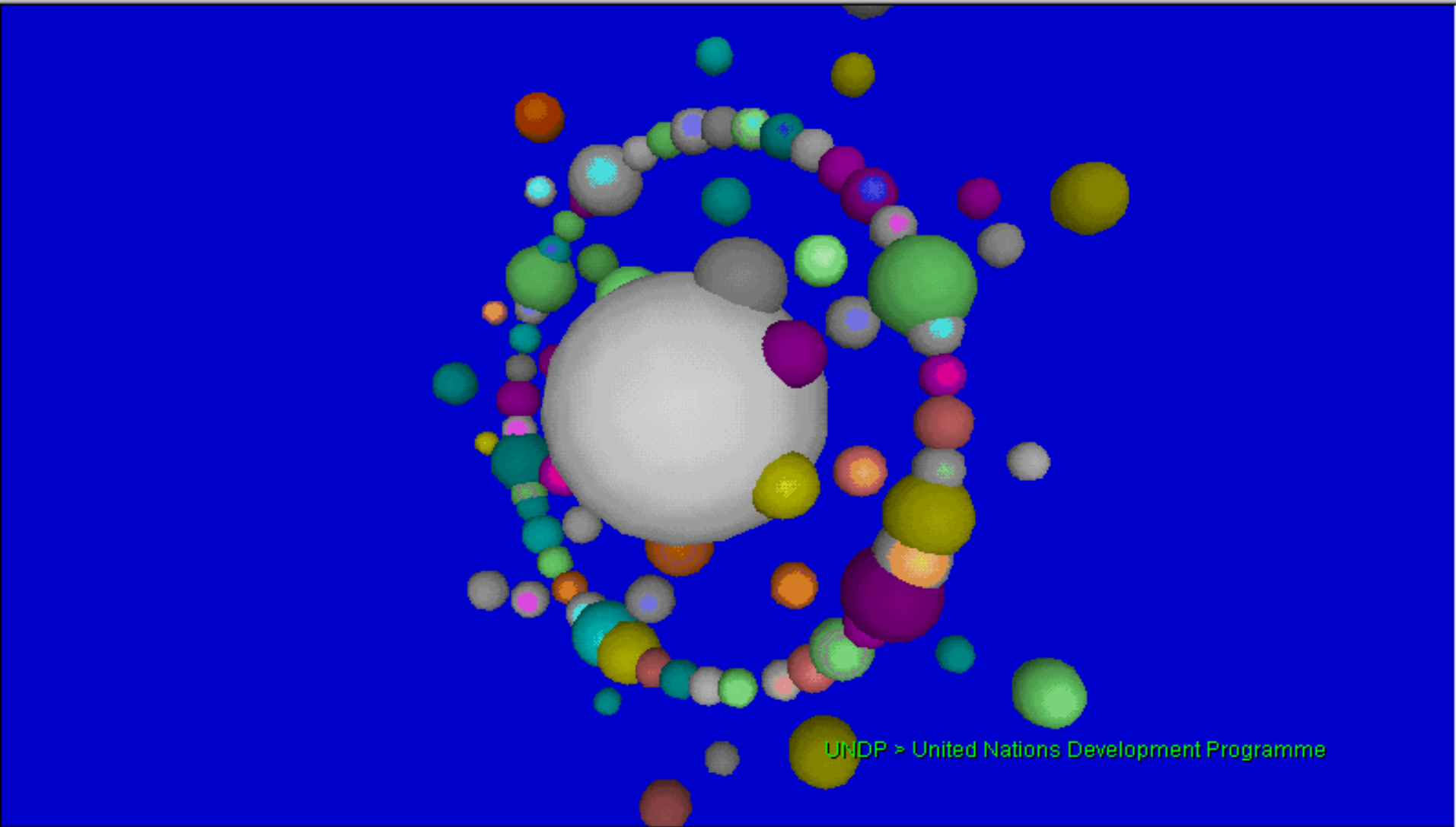
Mode 11: Spherically configured 3-D structures

- Polyhedra
- Tensegrity (*Syntegration*)
- Virtual reality
- Spherical accounting

VRML Example: Organizations (World Bank system)

Netscape - [file:///LI/UIADEMO/VRML/Vrml107.wrl]

File Edit View Go Bookmarks Options Directory Window Help

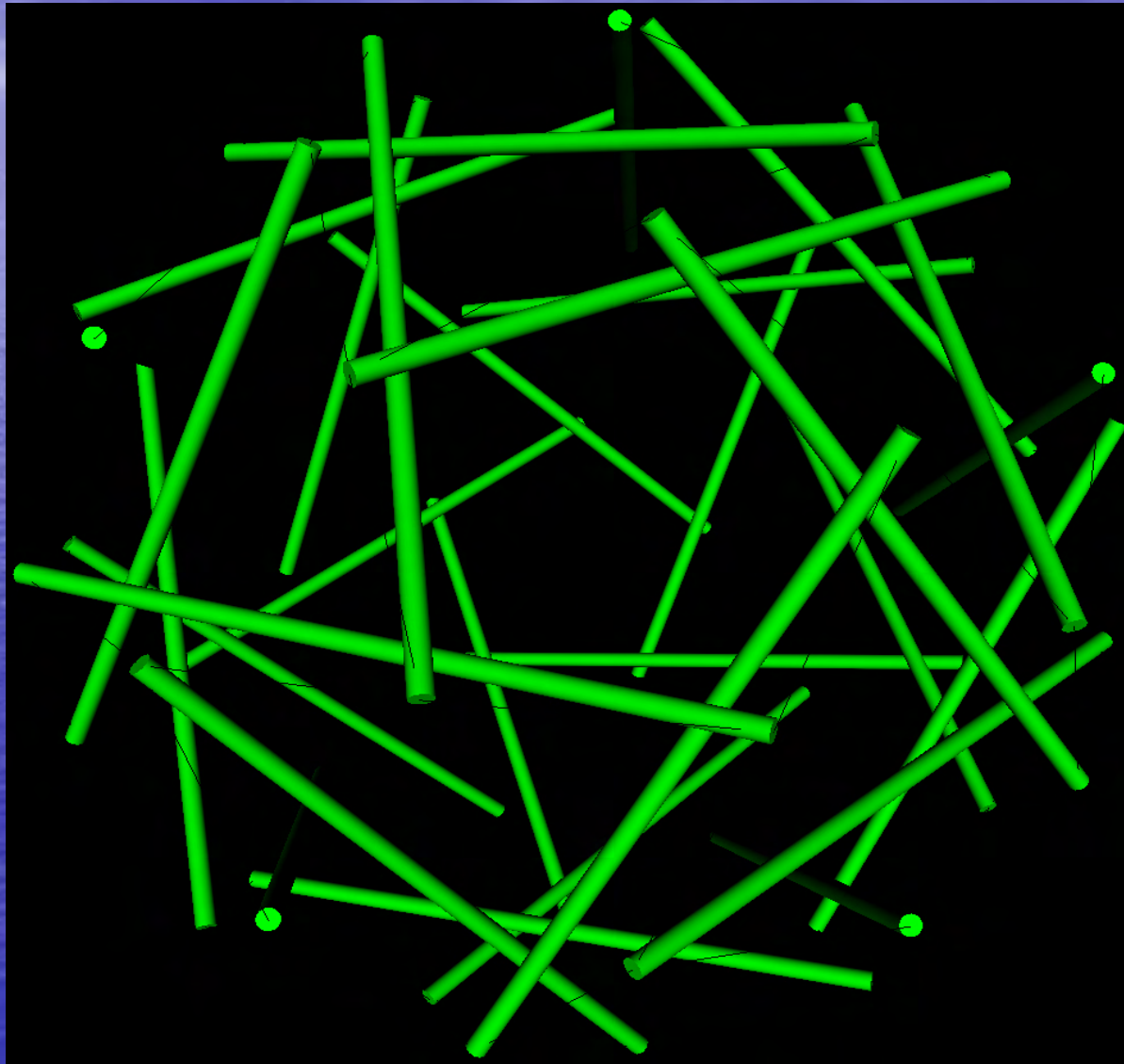


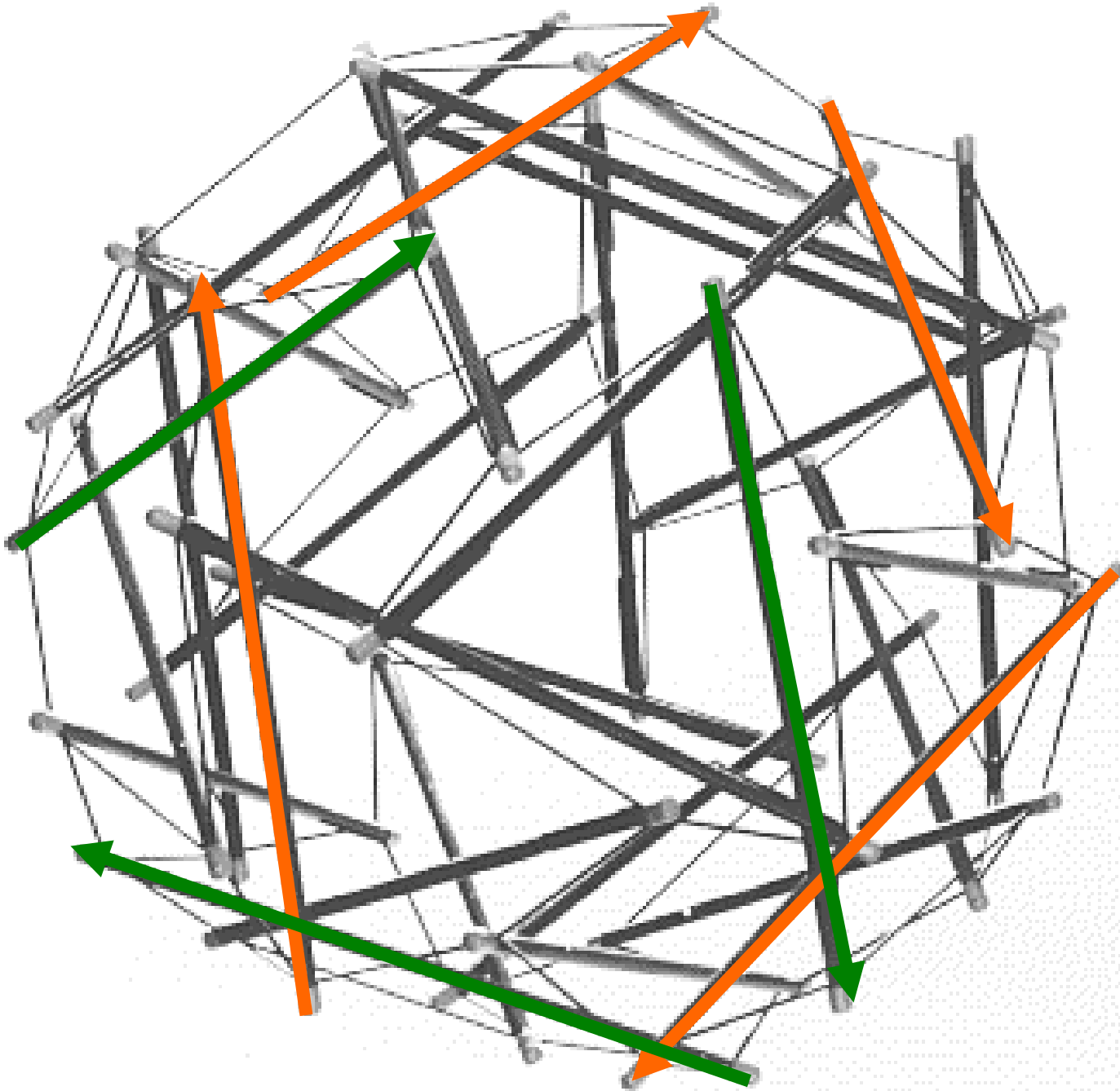
UNDP > United Nations Development Programme

▶ walk spin look slide point ⬆ lamp ⬆ view ?

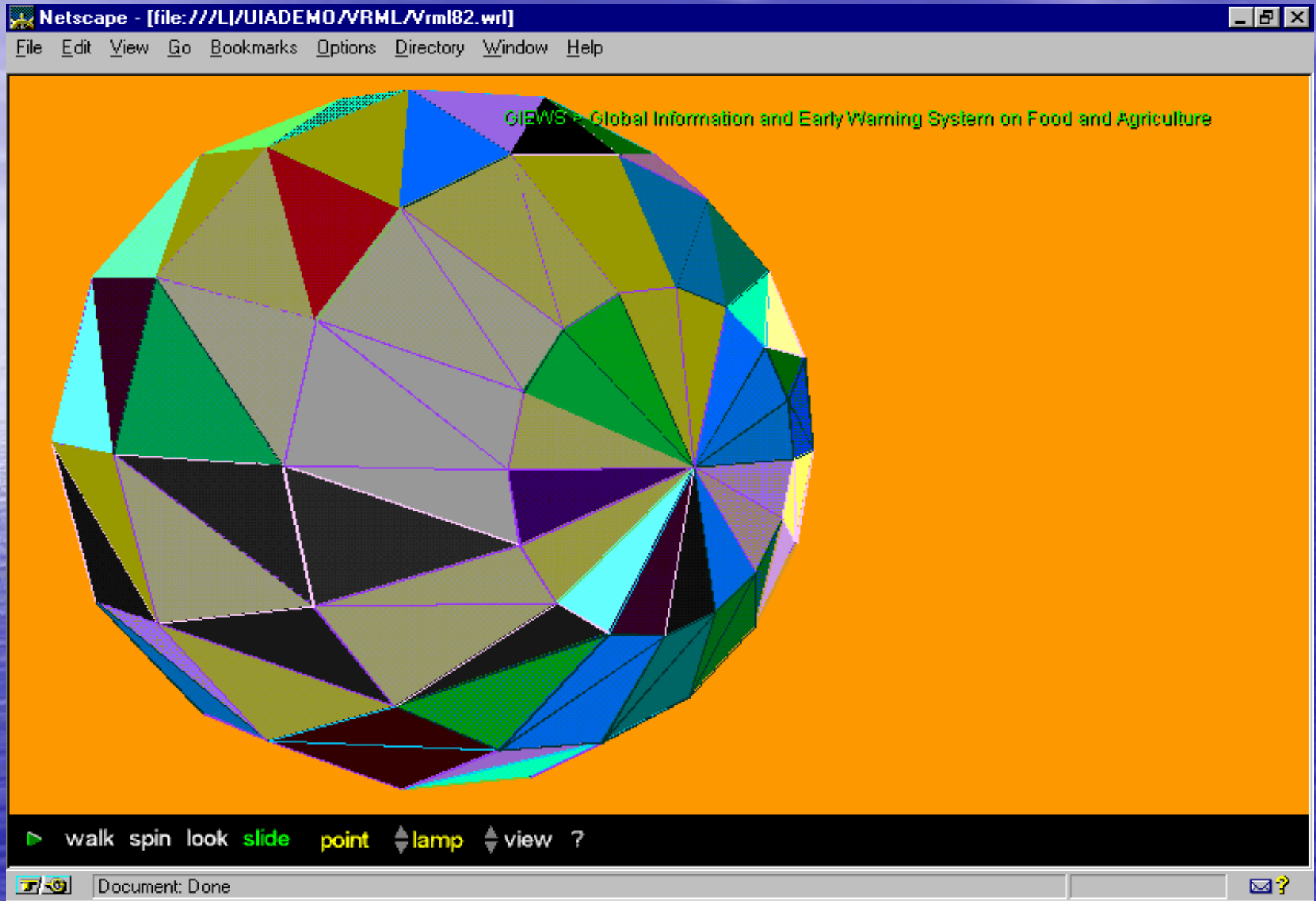
Document: Done

Tensegrity in virtual reality





VRML Example: Organizations (EU system)

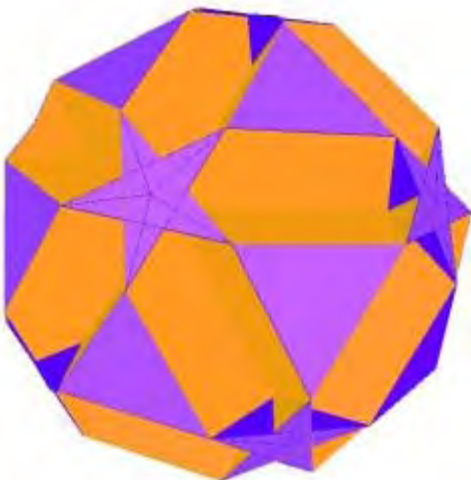


Vulnerability of marriage as an institution 34



[Discrimination against women](#)

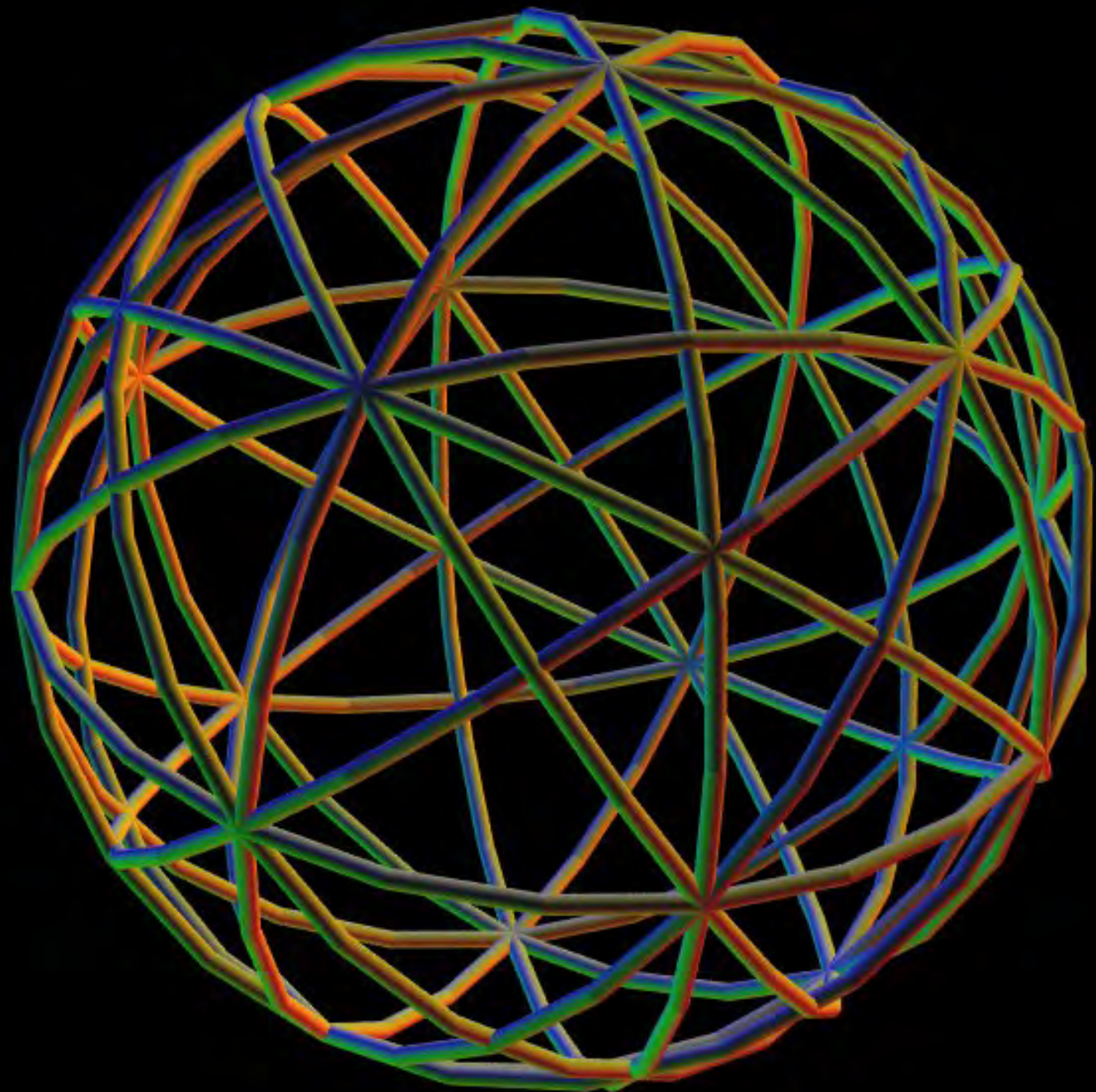
Virtual reality configuration of relationships from [World Problems](#) database (see below)



Link type	Total	Priority	Shape	Colour
Broader problems	4	Low (Any) ▾	Any ▾	Random ▾
Narrower problems	7	Low (Any) ▾	Any ▾	Random ▾
Related problems	2	Low (Any) ▾	Any ▾	Random ▾
Aggravates problems	22	Low (Any) ▾	Any ▾	Random ▾
Aggravated by problems	13	Low (Any) ▾	Any ▾	Random ▾
Reduces problems	0			
Reduced by problems	0			
All links	48	Low (Any) ▾	Any ▾	Random ▾
No link	-	Low (Any) ▾	Any ▾	Random ▾

Submit

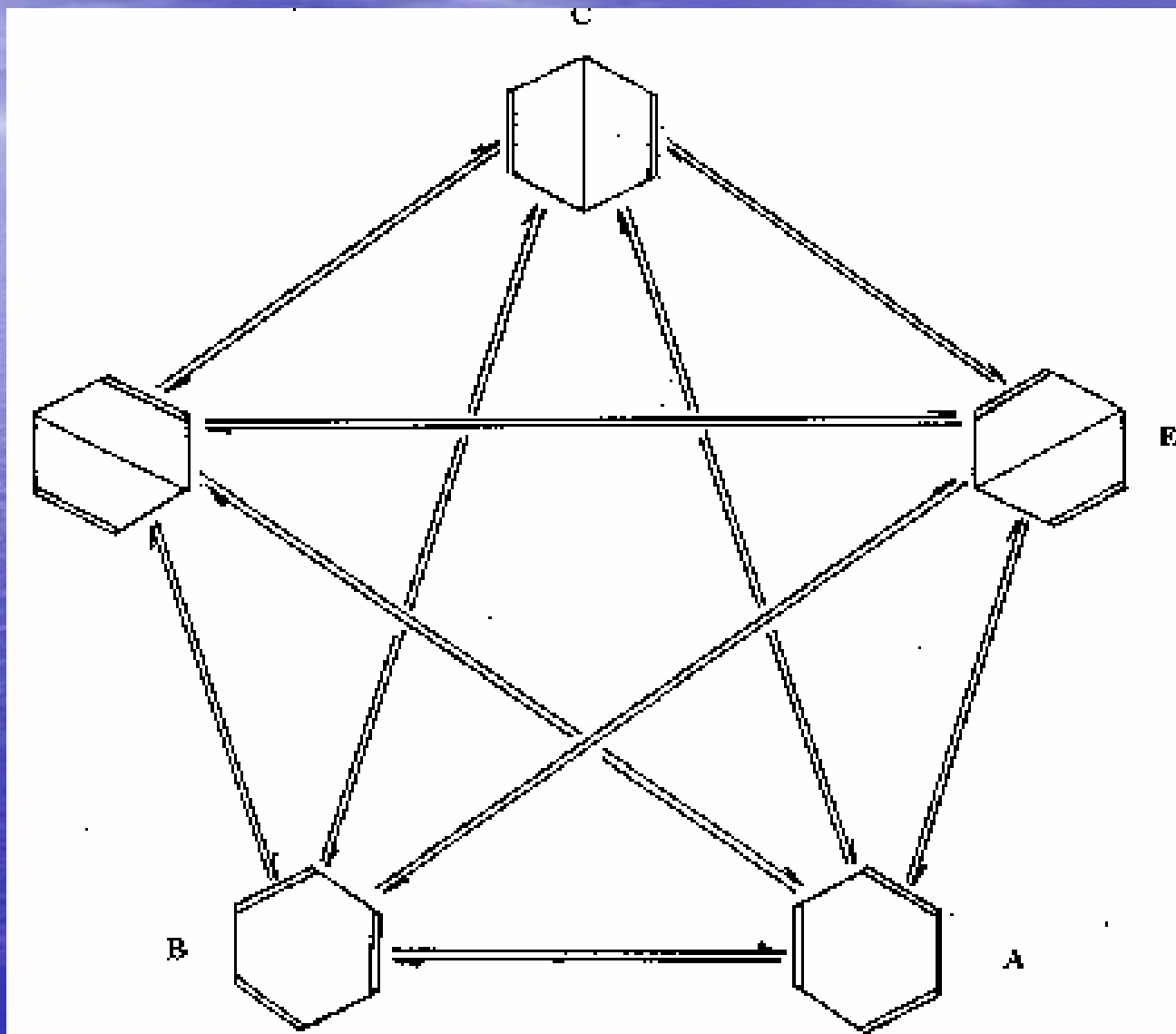
Reset



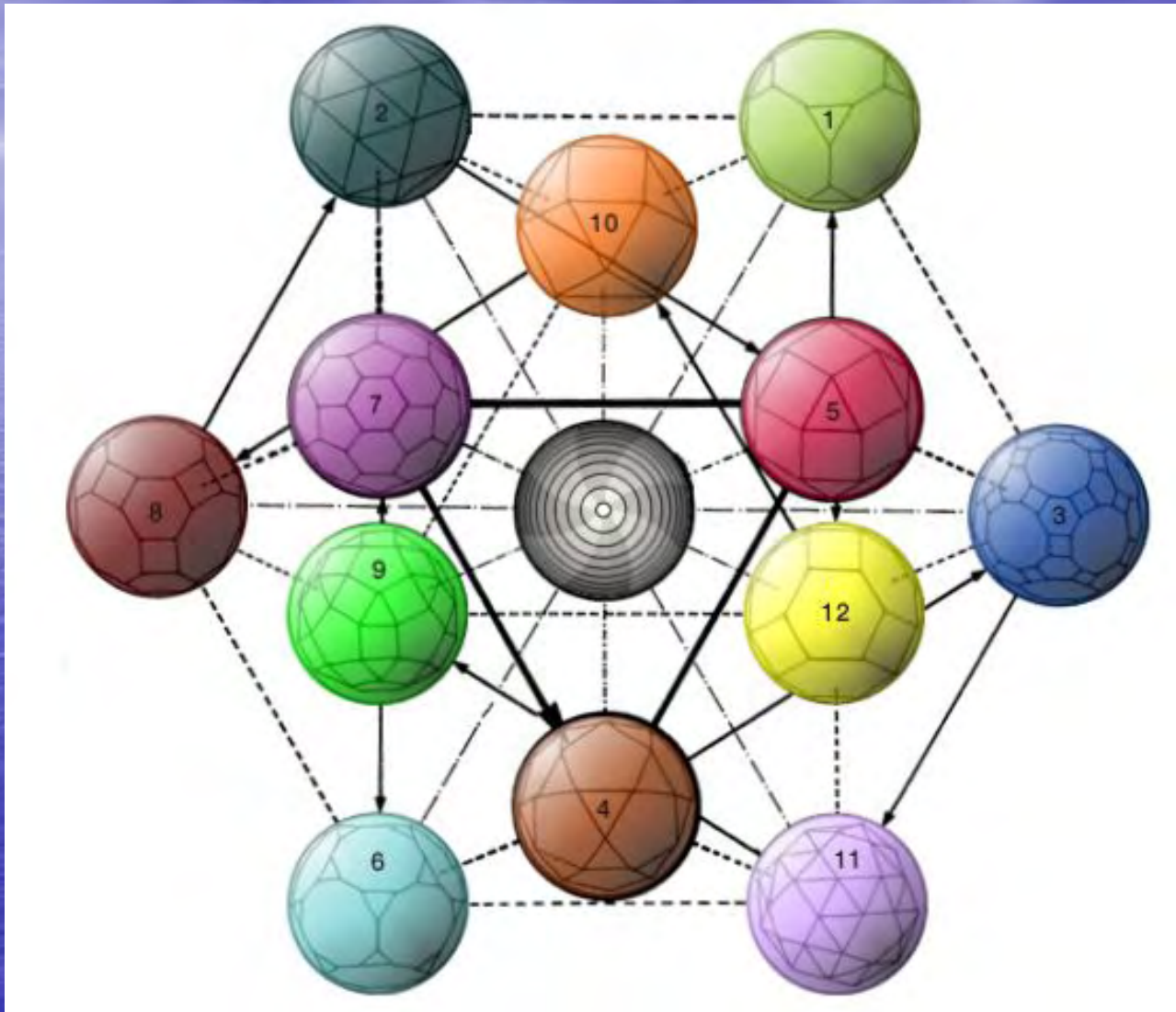
Mode 12: Transformable structures , morphable images

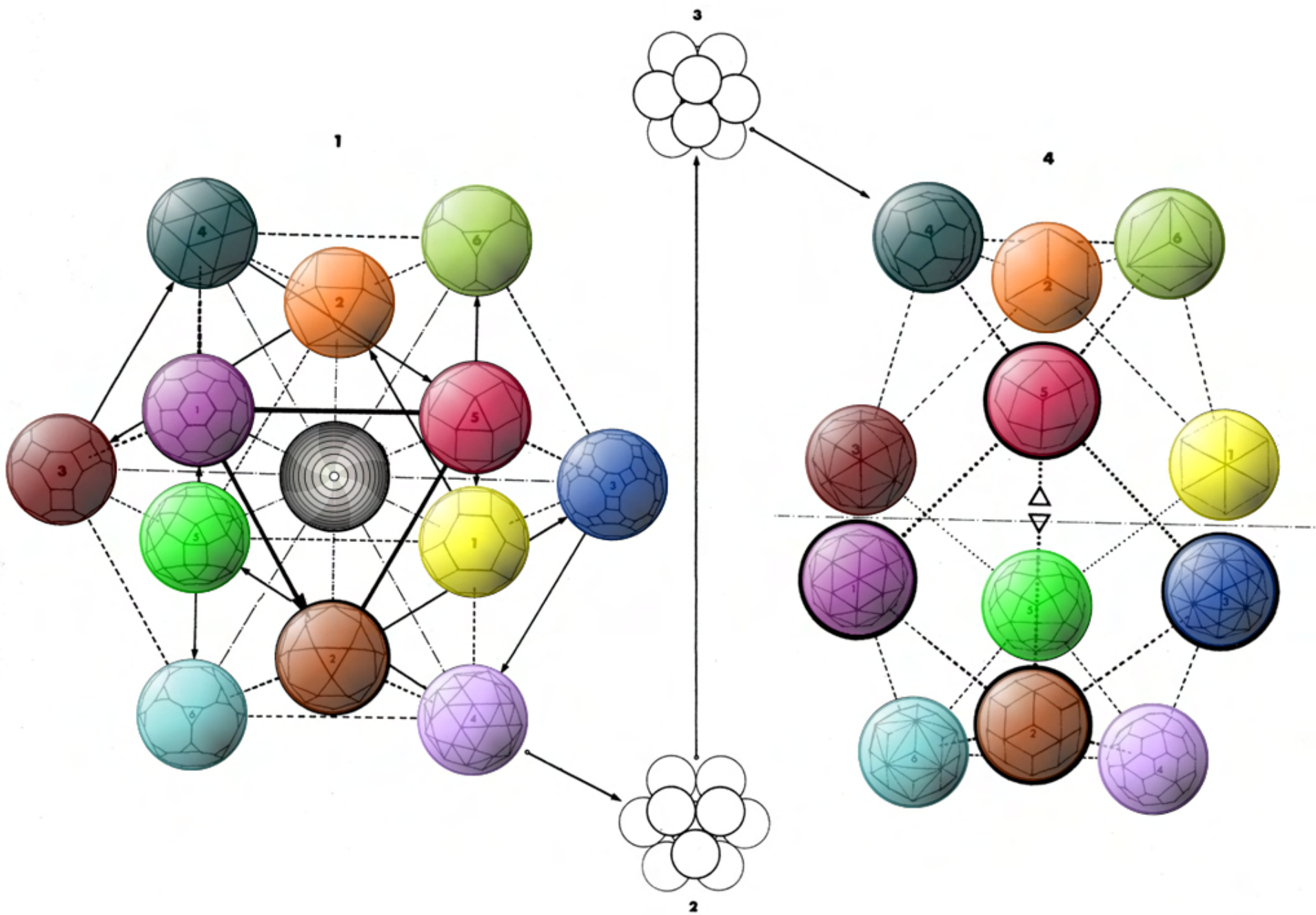
- Vector equilibrium (“Jitterbug”)
- Morphable images

Resonance hybrids: key to future sustainability ?

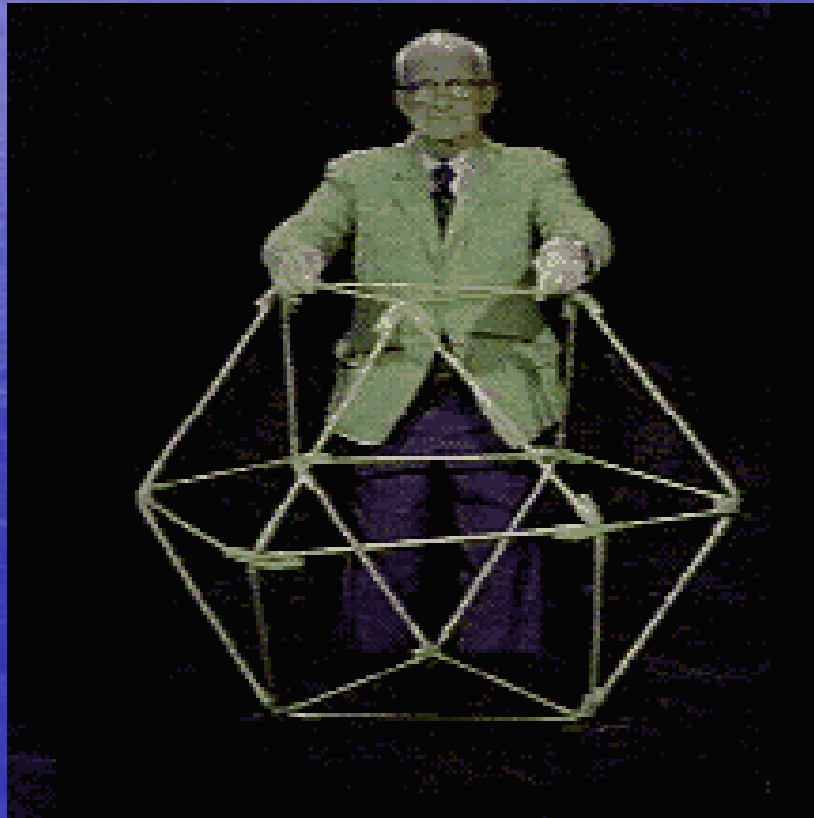


"Dodecameral" integration





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

- [Humour and Play-Fullness: essential integrative processes in governance, religion and transdisciplinarity](#) (2005)
- [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)
- [Dynamically Gated Conceptual Communities: emergent patterns of isolation within knowledge society](#) (2004)
- [Knowledge Gardening through Music: patterns of coherence for future African management as an alternative to Project Logic](#) (2000)
- [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)
- [Poetry making and Policy making: marrying Beauty and the Beast](#) (1993)
- [Aesthetics of Governance in the Year 2490](#) (1990)