
Document 10.2.2.

Mapping Songlines of the Noosphere:

Use of hypergraphs in presentation of the *I Ching* and the *Tao te Ching*

This paper, prepared by Anthony Judge of the UIA, can be viewed on-line at <http://www.laetusinpraesens.org/media/hyper/hychia.php>. The examples included here are intended only as illustrations. Dynamic examples can be viewed in the on-line version. The Java applets used there were produced as a project of HyperGraph. Many of them are applied to sustainable dialogue, conferencing, policy, networking, community or lifestyles. See also documents 10.2.1. and 10.2.3. in this volume.

Introduction

Information systems and tools for guidance in strategy development and policy-making tend to focus on relatively narrowly defined domains, if not on extremely specific topics. It is however increasingly recognized that the challenge lies as much in the relationships between domains as within those domains. There are of course tools for scoping out broad domains, but these are frequently associated with fashionable proprietary "models" which are presented in expensive management seminars as part of a consultancy process. They tend also to be a product of a particular "management" culture, notably those of western approaches to organization.

As argued effectively by Susantha Goonatilake (*Toward a Global Science: mining civilizational knowledge*, 1999), there is a strong case for exploring the conceptual models of other cultures in the event that they may offer complementary insights. He notably focuses on the relationship between guiding metaphors from eastern and western cultures (cf *Enhancing the Quality of Knowing through Integration of East-West metaphors*, 2000). Some of the models of other cultures have stood the test of time and continue to be valued.

The challenge at this time might be described in terms of reconciling domains such as those described through code-words such as: "dialogue", "conferencing", "policy", "networking", "community", "lifestyle" and "vision". The experiment here uses the pattern of relationships between the set of metaphors of the Chinese classic (the *I Ching* or *Book of Changes*) that aspires to interrelate the complete set of changes, notably of a psycho-social form and notably as understood to be relevant to governance – whether of a society, a family or a person. A related approach is taken with respect to an associated Chinese classic the *Tao Te Ching* which offers a set of fundamental guiding insights. Both link the preoccupations of more specific domain through an overarching understanding of values. This experiment is seen as an effort to point to complementary modes of thinking that may, as argued by Goonatilake, become increasingly important to global governance – especially with the increasing importance of China.

The intention here is to enable users to experiment with a variety of possibilities of presenting on a hypersphere the set of transformative relationships between the conditions of psycho-social change identified by the 64 hexagrams of the *I Ching*. A similar approach is taken with the 81 octagrams of the *Tao Te Ching*. These conditions are understood to be associated with fundamental values or principles – or attractors – helpfully interlinked in each case by transformative relationships between them. Applet maps (of which the

following is but one example accessible from the menu on-line) endeavour to facilitate comprehension of the transformation pathways between these conditions.

The applet maps are under development as a project of HyperGraph. The following application was enabled by Tomáš J. Fülöpp. On-line, each map can be manipulated, bringing any part of the map to the centre of the screen. Maps are inter-linked. Labels and comments provide information on the nodes. The degree of complexity can be increased or lowered.

The experiment printed here is one of those introduced in *Mapping Songlines of the Noosphere: Use of hypergraphs in presentation of the I Ching and the Tao te Ching* (2006) which serves as an index to these experiments

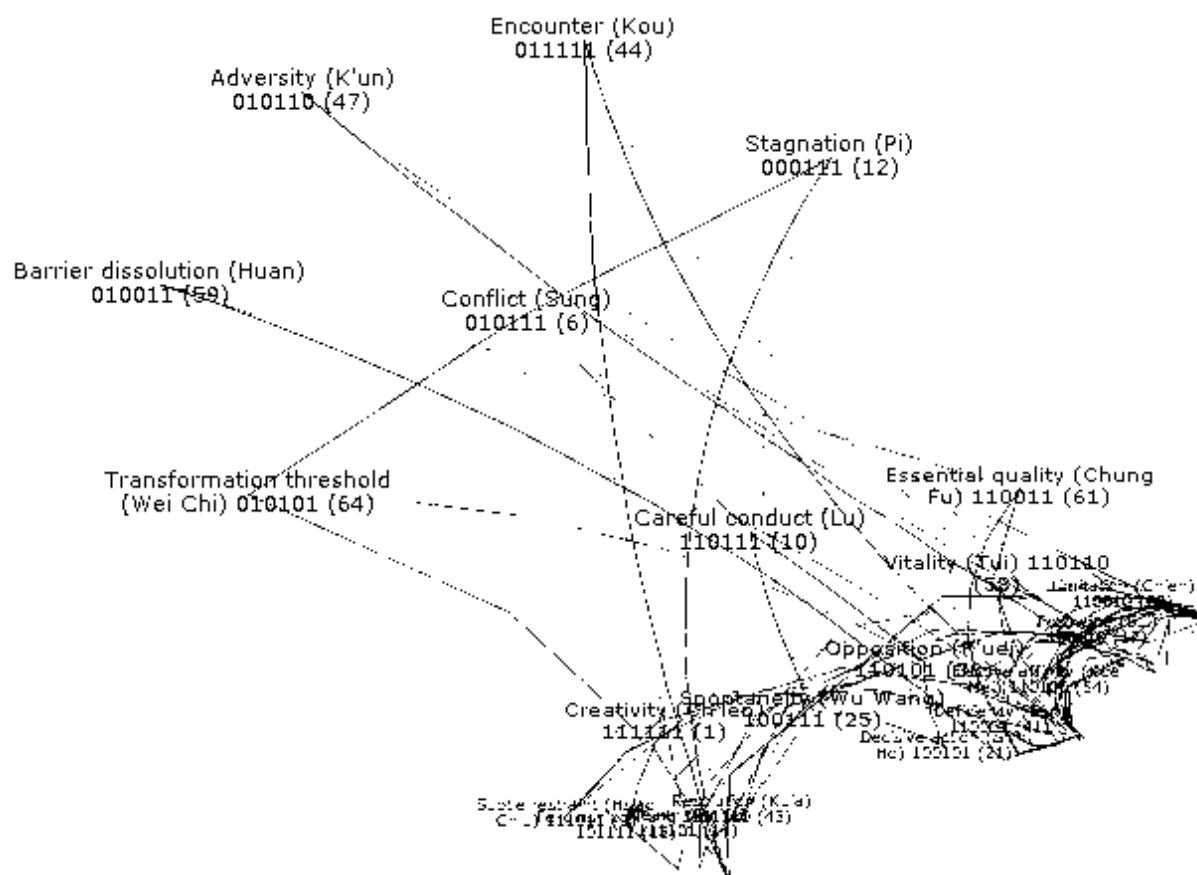
Comments

I Ching: Rather than denote the hexagram conditions by lines in the applet, these have been converted into a binary code, namely a solid line is treated as a 1 and a broken line as a 0. A complete 6-line hexagram can then be described as 100010, for example, namely *Chun* (Initial difficulty). The binary code is read left to right, corresponding to hexagram lines from bottom to top.

In the *I Ching* hexagram of 6 lines, a "moving line" is traditionally understood to occur where a solid line shifts to a broken line (or vice versa) – thus transforming one of the 64 hexagram conditions into another. It is these transformative pathways that are represented in the above applet (cf *Transformation Metaphors (I Ching): dialogue, vision, conferencing, policy, network, community and lifestyle*, 1997).

There is however also the possibility of more than one "moving line" in a hexagram. Two such lines would transform the condition into an entirely different hexagram – a different condition. These multiple transformations are **not** represented in the applets above – except that in which the hexagram transforms into its "opposite".

The first "hierarchical" examples in the menu (available on-line) are the simplest to explore. They correspond to the traditional organization of hexagrams into 8 "houses" (cf *Organization of I Ching hexagrams in terms of traditional "houses"*, 1995). The other examples use coloured lines to distinguish the transformations at different "levels" between hexagrams – starting with "red" at the first level (the first position on the left). These levels are traditionally of great significance as a way of signifying the distinctions between the most mundane (eg red) and the most transcendental (eg violet) levels associated with any condition. This is the value of



those applets in the menu which focus either on the "lower" lines (1-3) or on the "upper" lines (4-6).

The "lines" 7 and 8, indicated in the menu, do not form part of the hexagram. Rather they are indicative of two additional forms of transformation, namely that to the "next" hexagram condition in the traditional sequence (eg #15 to #16), or that to the "opposite" hexagram (seen best in a circular representation (*Relationship between Hexagrams of the Chinese I Ching*, 1983)

In the case of those applets, where clicking on a condition links into a descriptive page about the condition, it should be noted that the description may focus on one of 7 parallel sets of descriptions: sustainable dialogue, vision, conferencing, policy, network, community and lifestyle. These sets may also be separately explored from any descriptive page accessed by clicking on a condition in the applet.

Tao te Ching: In the ongoing **experiments** with the 81 conditions of the *Tao te Ching*, the approach taken has been to assume that these could be described by an octagram composed of 8 horizontal lines (rather than a hexagram composed of 6). This is **not** a traditional approach, nor is it the conventional form of what is termed an octagram. It does however suggest the possibility of representing the conditions by a binary code. This is however of a different form, based on the following:

- it is assumed that the 81 octagrams can be made up of combinations of 8 quadgrams, each made up of two paired lines
- a rule is used to exclude conditions resulting from a pair of unbroken lines, notably resulting in 11111111; possibly to be understood as the implicitness of what is (not) named as Tao (according to the widely-cited first of the 81 conditions)
- effectively combinations of lines can only have three values (00,01,10) excluding (11)
- it is changes in these pairs of codes that is then assumed to determine a transformation into another octagram, a feature also **not** traditionally considered
- the labels attached to the traditionally numbered nodes are those derived from one interpretation of each condition (*Tao Te Ching Interpreted Succinctly: a 9-fold pattern of 81 insights presented as phrases*, 2003).
- the binary code associated here with each traditionally numbered condition is an assumption, and does **not** correspond to any traditional understanding (in contrast with the case of the *I Ching* hexagrams).

Earlier work on clustering the 81 conditions focused notably on the mathematics of so-called "magic squares" (cf *9-fold Higher Order Patterning of Tao Te Ching Insights: Possibilities in the mathematics of magic squares, cubes and hypercubes*, 2003). These suggest other ways of ordering the applet presentation that may highlight patterns of insight, coherence, learning or comprehensibility.

Future possibilities

Governance: In their own right both the *I Ching* and the *Tao te Ching* have long been valued for the insights they offered into the challenges and attitudes appropriate to governance – and especially to appropriate governance. The entities, conditions and insights – and the transformative relationships between them – frame, in a comprehensive manner, a valuable space for dialogue. How relevant this is to the contemporary challenge of governance in times of crisis could be usefully subject to further exploration. The future cultural initiatives of China may be extremely influential in this respect.

Of particular interest is the nature of the "connection" between content, of a higher order of abstraction, and the more concrete preoccupations of governance. The possibility of such a connection becomes increasingly probable with the renewed emphasis on "faith-based" forms of governance, increasing emphasis on "values", and increasing interest in the abstract forms of analysis of the complexity sciences.

Although coincidental, there is a certain irony to the confluence of new technical possibilities of exploring the integrative structure of the *I Ching* and the increasing interest in "questions" as reflected in a variety of international initiatives. Traditionally the *I Ching* was indeed notably valued for its oracular function in providing "answers" to questions – particularly at the highest levels of governance. The metaphorical nature of those answers was valued for the strategic insights they elicited. Ironically such uses might be compared with certain proprietary processes offered by modern consultancies to the leadership of corporations and other institutions.

What possibilities are there for fruitfully "confronting" the "million questions" generated from international preoccupations with "world problems", "global strategies", and "human values" (cf *Generating a Million Questions from UIA Databases: Problems, Strategies, Values*, 2006)? The challenge to creative imagination is particularly relevant now that the *I Ching* can be integrated, both textually and structurally, into the same database framework as that of those other conceptual entities.

Subtlety: The style of the *I Ching* and the *Tao te Ching*, even through the many efforts at their translation, helpfully challenges rigid frameworks and binary logic by which faith-based governance is currently bedevilled. They point to the appropriateness of subtler modes of thought (cf *Walking Elven Pathways: enactivating the pattern that connects*, 2006). However, given their cultural origins, the prescriptive form of the insights offered might be usefully nuanced, at least for some, by new facilities in the parsing and manipulation of text. The fundamental question is perhaps what forms could wisdom usefully take to be of significance for the future of governance (cf V.S.M. De Guinzbourg, *Wit and Wisdom of the*

United Nations: Proverbs and Apothegms of Diplomacy, 1961)?

The technical facilities within which such texts are presented over the web can be relatively easily extended to enable the user to modify the syntactical form at will. Users might choose between "hard" and "soft" comments, notably between the extremes of injunction and question.

Ecology of insight: Curiously most sources of insight emphasize the relevance of particular insights under particular circumstances. This is especially clear in the case of sets of aphorisms or teaching stories. It is also to a high degree implicit in the manner in which the *I Ching* has traditionally been used. Potentially of greater value is the new capacity to interact with a large set of insights, navigating between its parts along what are effectively learning pathways. This might be understood as a response to a social situation in which each is nourished by particular insights and may act inappropriately from that mindset if there is no awareness of complementary insights capable of constraining the excesses and dysfunctionalities of partial truths. Texts such as the *I Ching* specifically draw attention to the transformation between contrasting conditions, any of which may be problematic under particular circumstances.

Tools such as those described above place emphasis on the ecology of insights – usefully raising questions about the ecology of wisdom and how it is to be sustained.

References

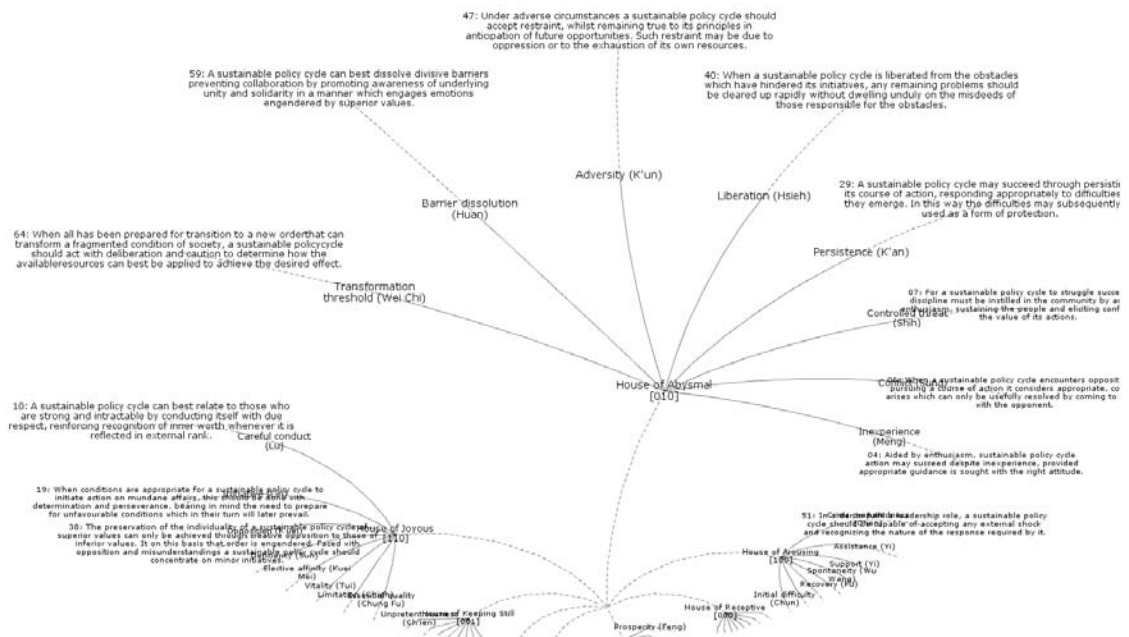
- Walling R. Cyre. Conceptual Modeling and Simulation. 1999
- Eui-Hong (Sam) Han, George Karypis, Vipin Kumar, Bamshad Mobasher. Clustering In A High-Dimensional Space Using Hypergraph Models. 1997
- Anthony Judge:
 - Hyperspace Clues to the Psychology of the Pattern that Connects: in the light of the 81 *Tao Te Ching* insights, 2003
 - 9-fold Higher Order Patterning of *Tao Te Ching* Insights, 2003
 - Hyperaction through Hypercomprehension and Hyperdrive: necessary complement to proliferation of hypermedia in hypersociety. 2006
 - Sacralization of Hyperlink Geometry. 1997
 - From Information Highways to Songlines of the Noosphere: global configuration of hypertext pathways as a prerequisite for meaningful collective transformation. 1996
 - Organization of I Ching hexagrams in terms of traditional "houses". 1995
- Peter D. Loly. A Logical Way of Ordering the Hexagrams of the Yijing and the Trigrams of the bagua. *The Oracle - The Journal of Yijing Studies*, vol. 2, no. 12, January 2002, p.2-13

Visualization: It is appropriate to note that separate experiments have been made with the *I Ching* conditions and relationships as part on an online exploration of patterns and metaphors. The exploration, using a copy of the same data set as that used above, offers the same set of online search and visualization possibilities (implemented by Tomáš J. Fülöpp) as that provided for other databases: Problems, Strategies, Values, Organizations, etc. (*Information visualization and sonorification: displaying complexes of problems, strategies, values and organizations*) – and notably those described in documents 10.1.1. and 10.1.2. for exploring potential questions.

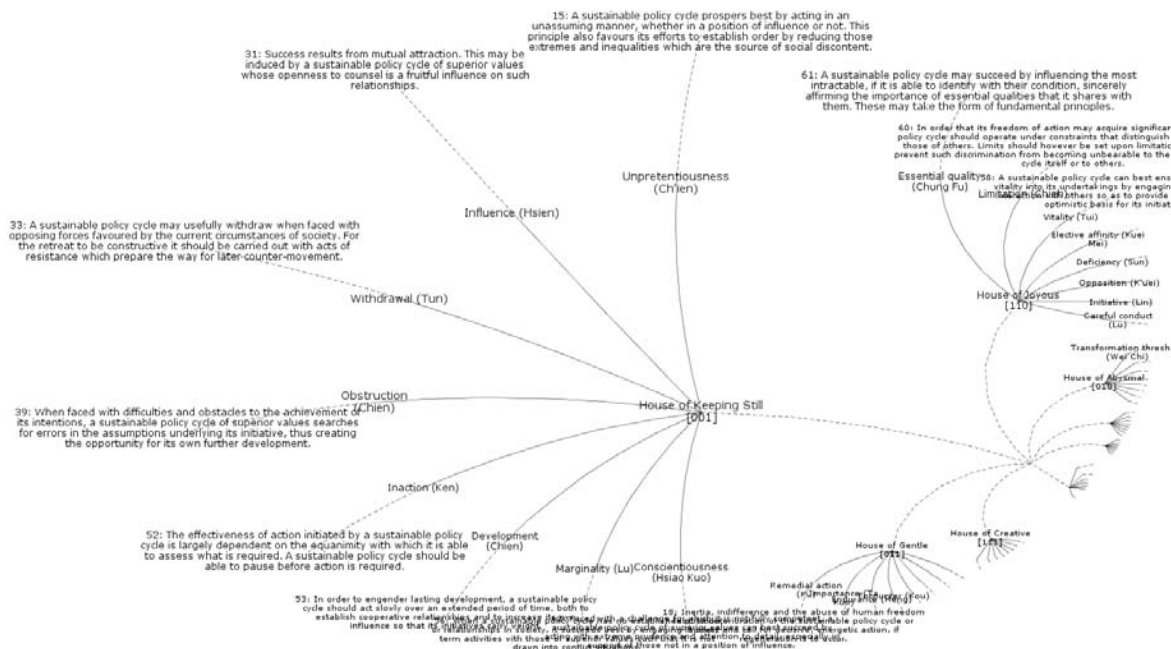
HyperGraphs: “Policy”

For further information on HyperGraphs, see the introductory notes to document 10.1.2.

Abysmal



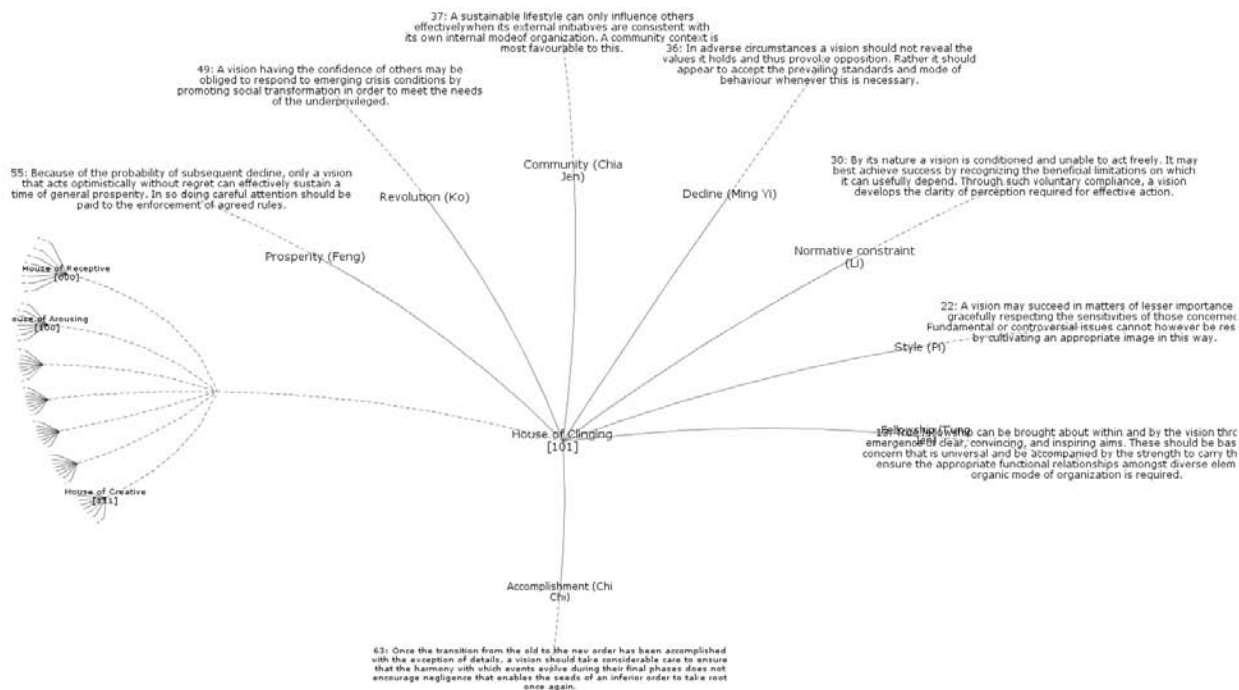
Keep still



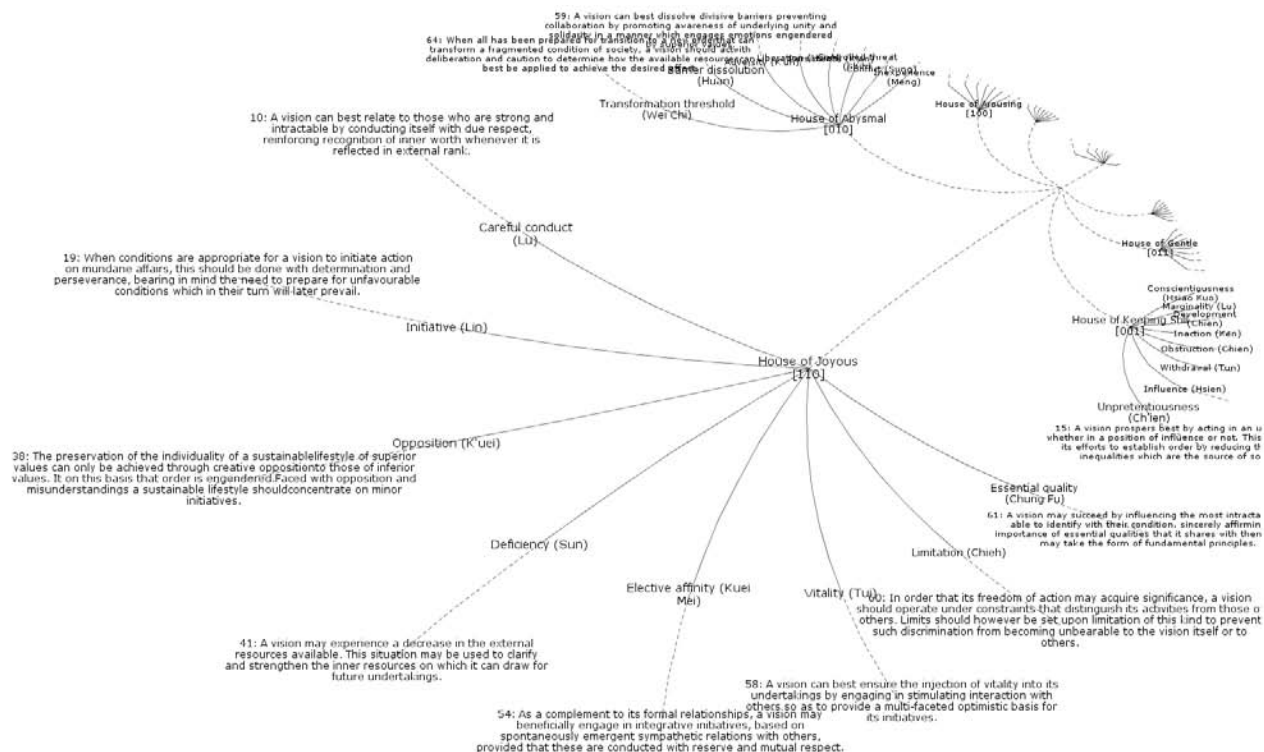
HyperGraphs: “Vision”

For further information on HyperGraphs, see the introductory notes to document 10.1.2.

Clinging

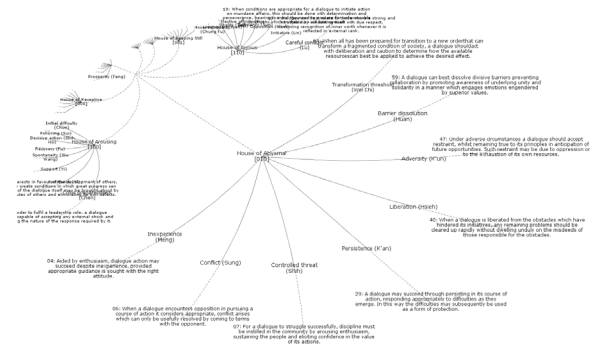


Joyous

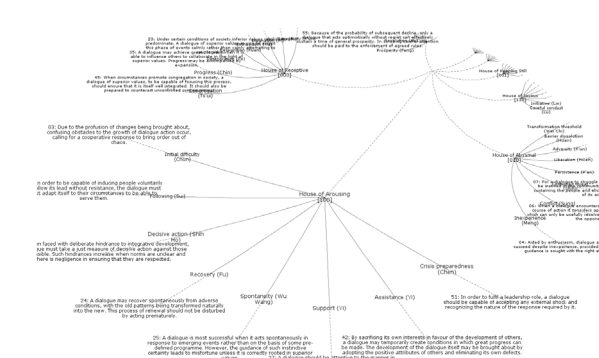


HyperGraphs: “Dialogue”
For further information on HyperGraphs, see the introductory notes to document 10.1.2.

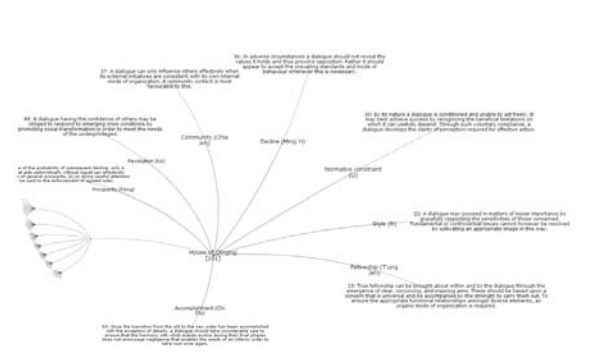
Abysmal



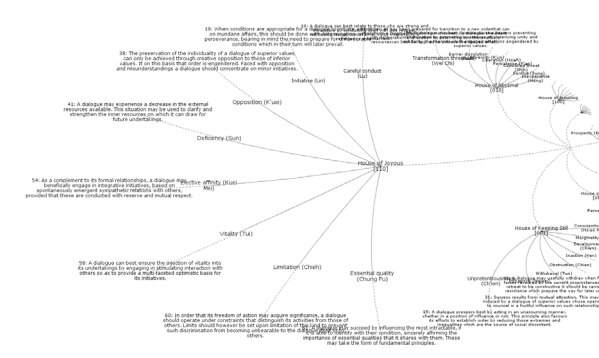
Arousing



Capture



Joyous

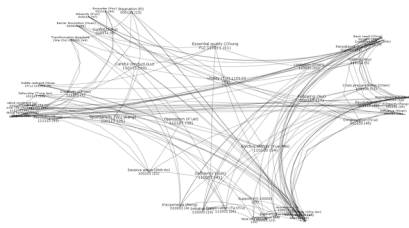


Receptive

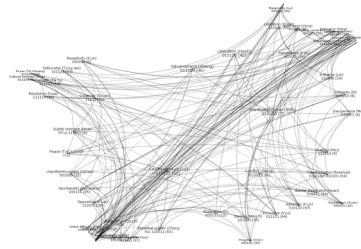


HyperGraphs: “Numbers”

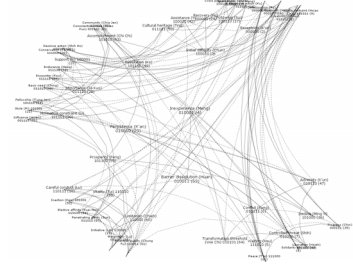
1 – 6



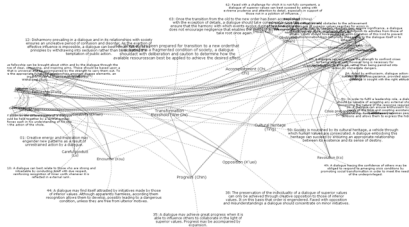
1 – 8



4 – 8



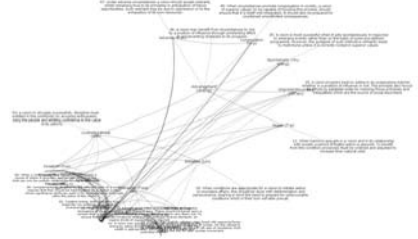
1 – 2 – 3 – 7: Dialogue



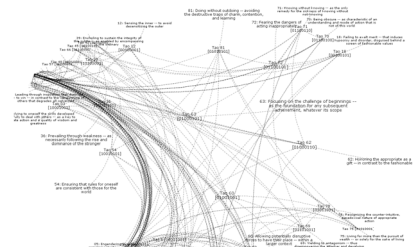
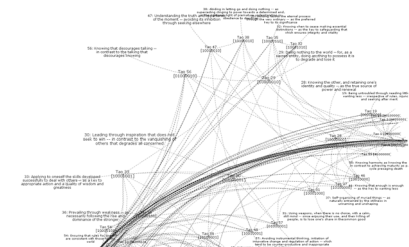
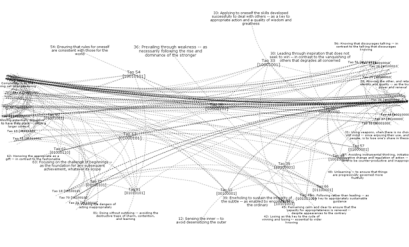
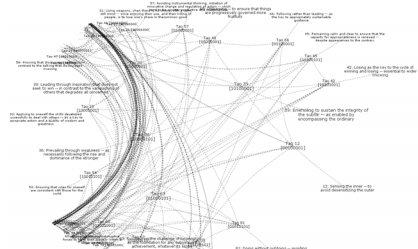
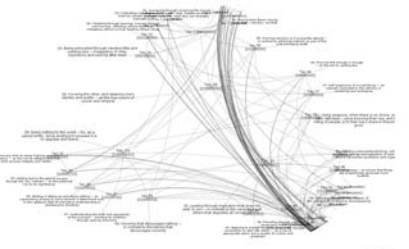
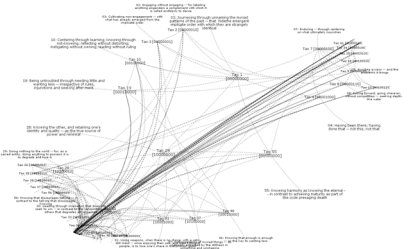
1 – 2 – 3 – 7: Policy



1 – 2 – 3 – 7: Vision

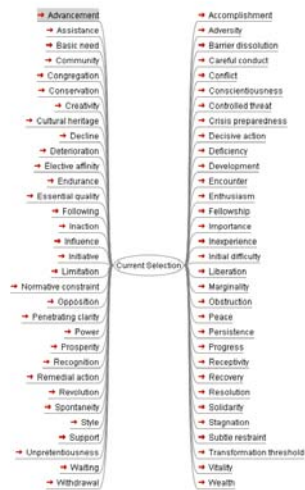


HyperGraphs: “Tao Te Ching”

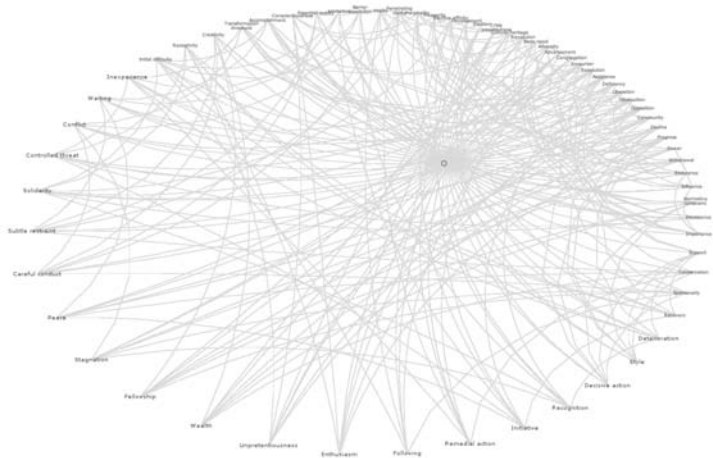


The introductory notes to document 10.1.2. pertain the following 4 illustrations.

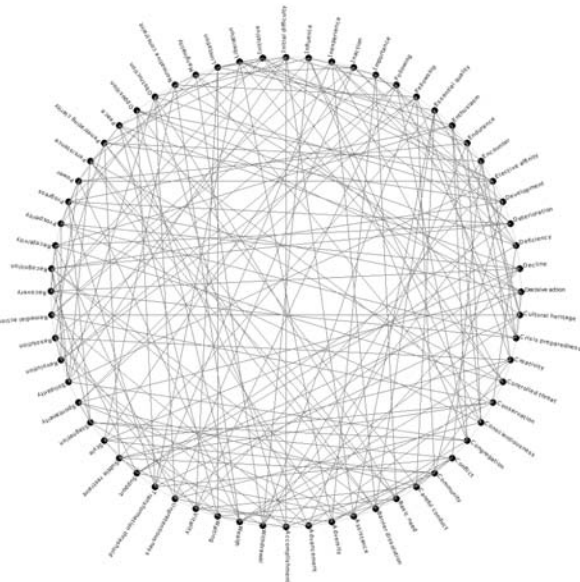
Hierarchical metaphor
FreeMind



Hierarchical metaphor: Hyperbolic metaphor
HyperGraph



Circular metaphor
PNG (Portable Network Graphics)



Scatter graph metaphor
PNG (Portable Network Graphics)

