

Title: DIALECTIC WHEELS AND CAUSAL NETWORKS FOR CONCEPT MAPPING,
DECISION MAKING AND MORAL WISDOM GENERATION

CROSS-REFERENCE TO RELATED APPLICATION

N/A

FIELD OF THE INVENTION

[0001] The present invention relates generally to the concept-mapping and decision-making methods that can be used in analytical psychology, philosophy, Humanistic / Gestalt therapy, personal and scientific theory development, artificial intelligence, text generation, creation of artificial honesty and wisdom, computational ethics and morality.

BACKGROUND OF THE INVENTION

[0002] By way of background, the ability for people to determine if they are honest and truthful (to themselves) is the major prerequisite for a happy life. Often, people perceive a given problem or situation one-sidedly, struggling to see a big enough picture.

[0003] Understanding the causes of past failures and ways to a better future is perhaps the most important task of humanity. Often pragmatic thinking downplays the importance of moral wisdom, which is ultimately the most important.

SUMMARY OF THE INVENTION

[0004] The subject matter disclosed and claimed herein, is a method configured to serve as a “decision-making wakeup call”, that expands people’s views through suggesting opposite opinions and the ways toward "win-win" situation. The method can be related to the ancient principles of Taoism and Aristotelean Golden Mean, as well as the modern concepts of complementarity in cognitive science. From philosophical perspective, the method suggests existence of the ‘Higher Truth’, as a “resonant synchronization” of opposing views (thus augmenting various Theories of Truth). But from practical perspective, it requires lots of patience, thus calling for a proper visualization and automation.

[0005] The disclosed principles can be used for designing a ‘universal causal network’, that can help uncover the deeper meaning of any words and theses, generate wise sayings and hypotheses, verify the validity of any judgements (goals, decisions), balance opinions, change attitudes. This forms the basis for the development of ‘Artificial Honesty’ and modelling logical reasoning in various theories, ideologies, doctrines and worldviews.

[0006] The disclosed principles can also be used for systemizing and retrieving any information pertaining to personal development, profiling human characters, identifying personalities based on the words and theses that a person uses, and forecasting future events

DRAWINGS

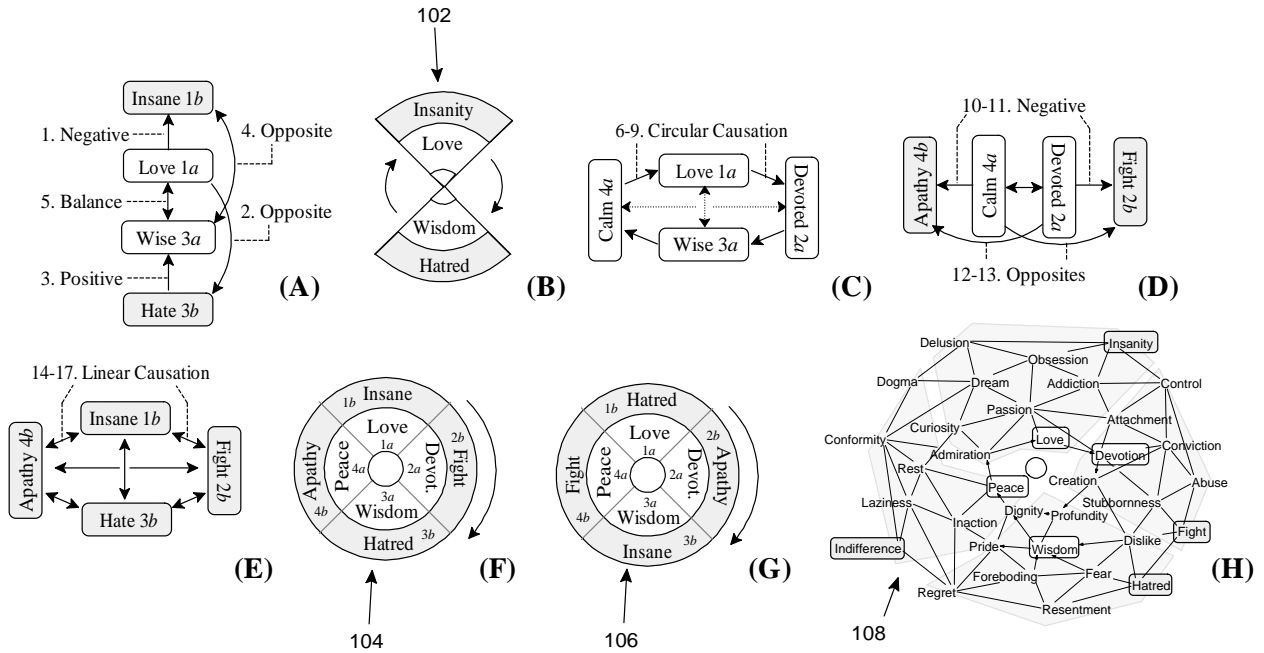


FIG. 1

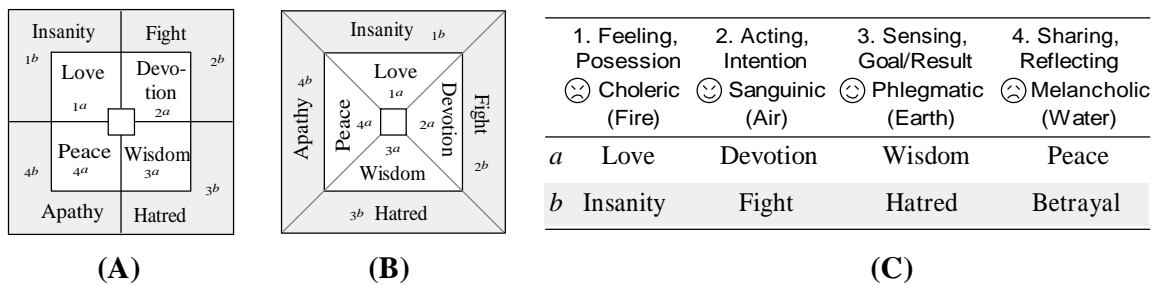


FIG. 2

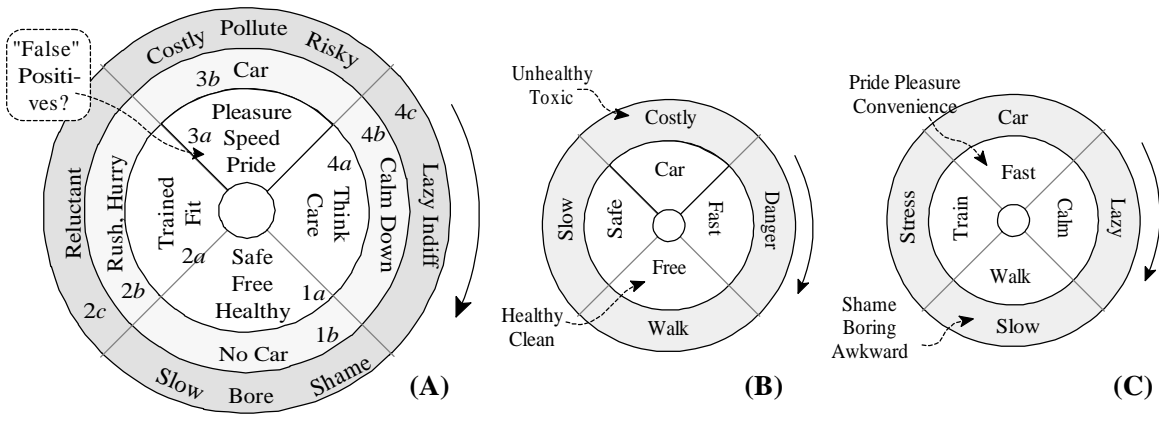


FIG. 3

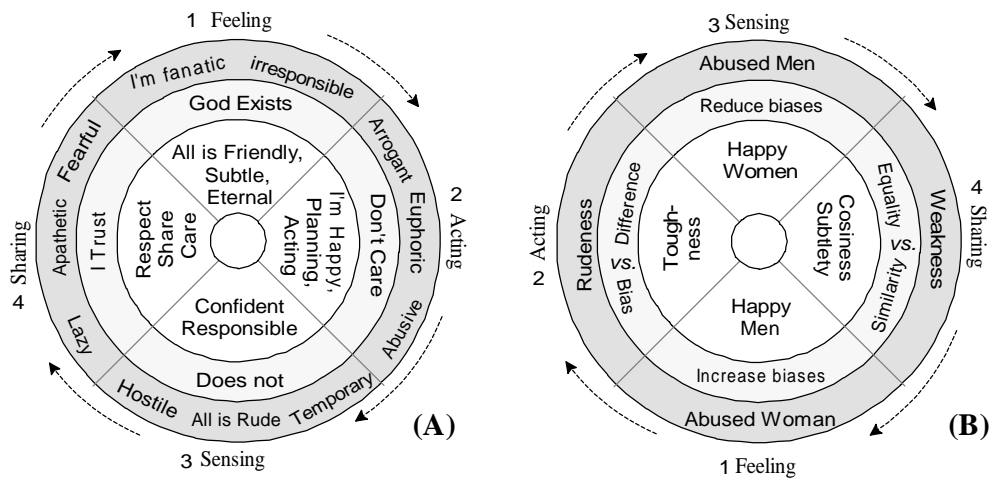


FIG. 4

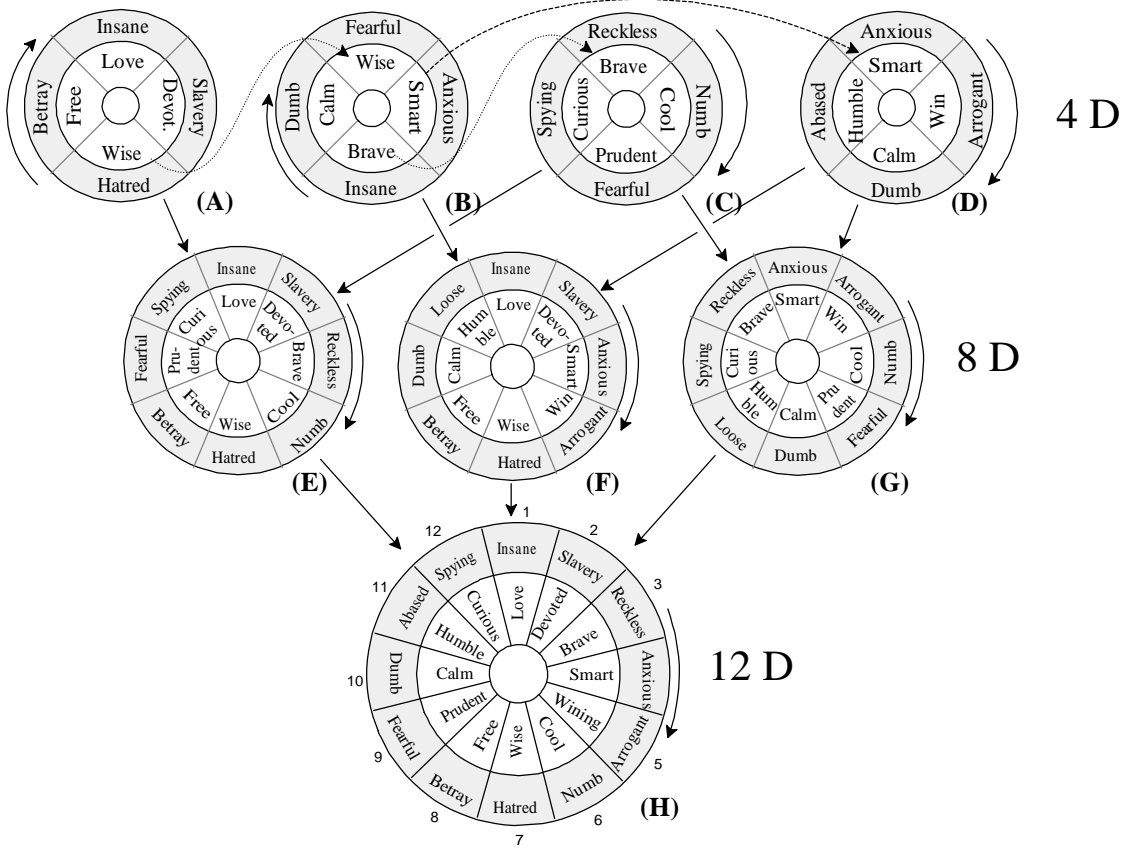


FIG. 5

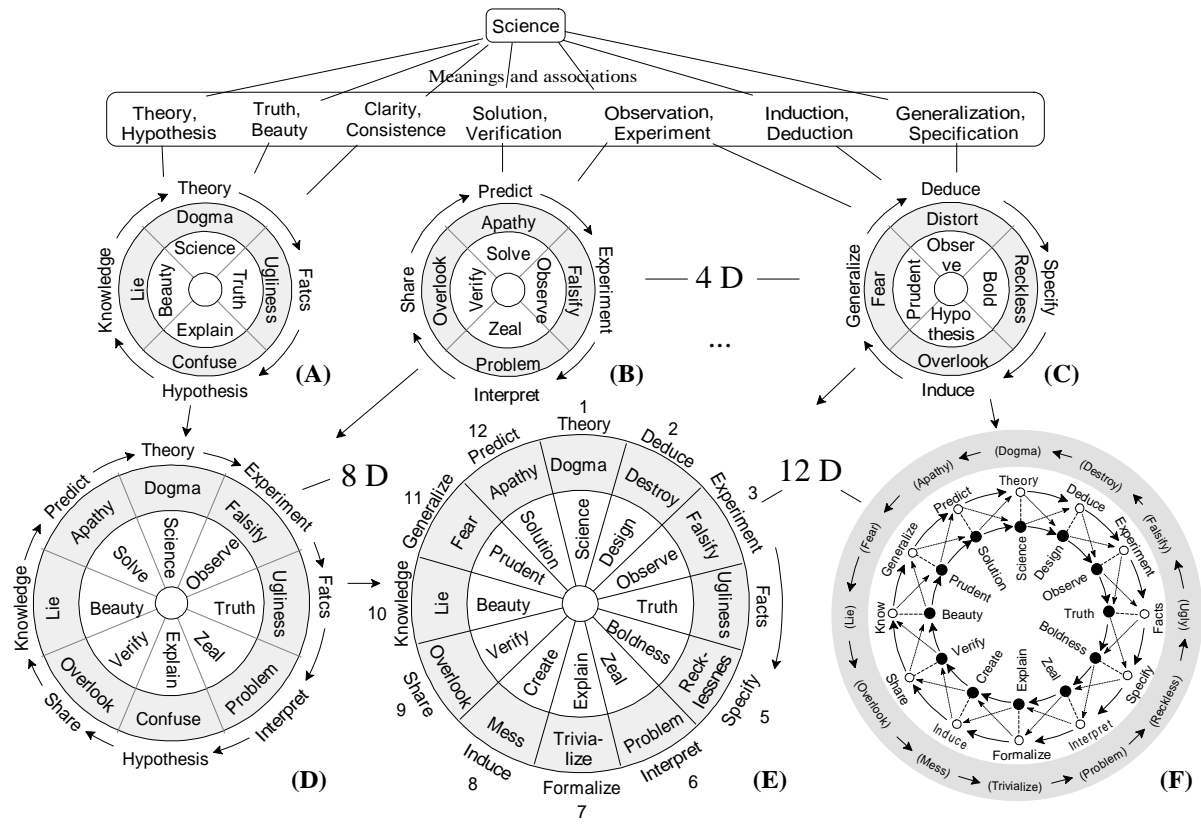


FIG. 6

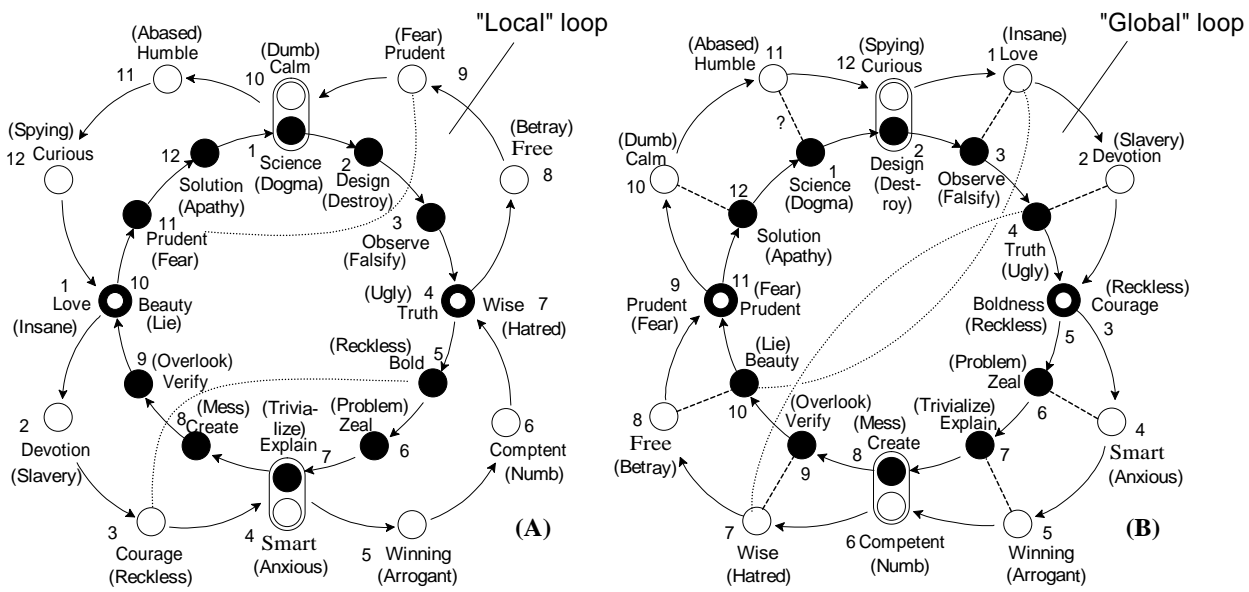


FIG. 7

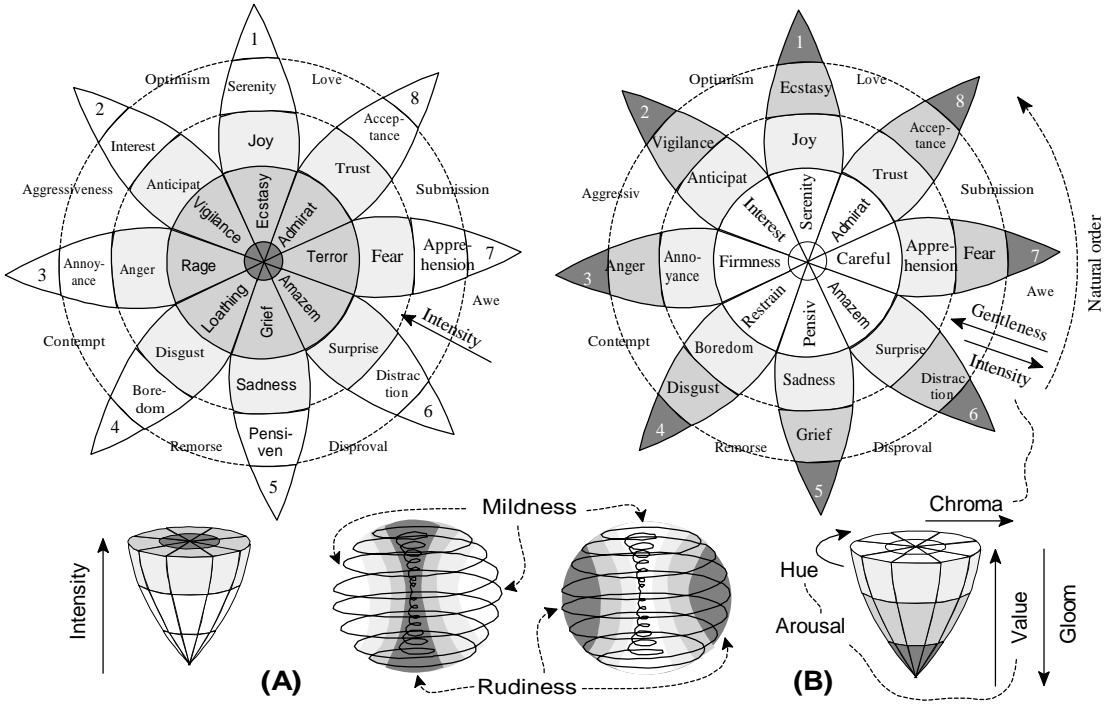


FIG. 8

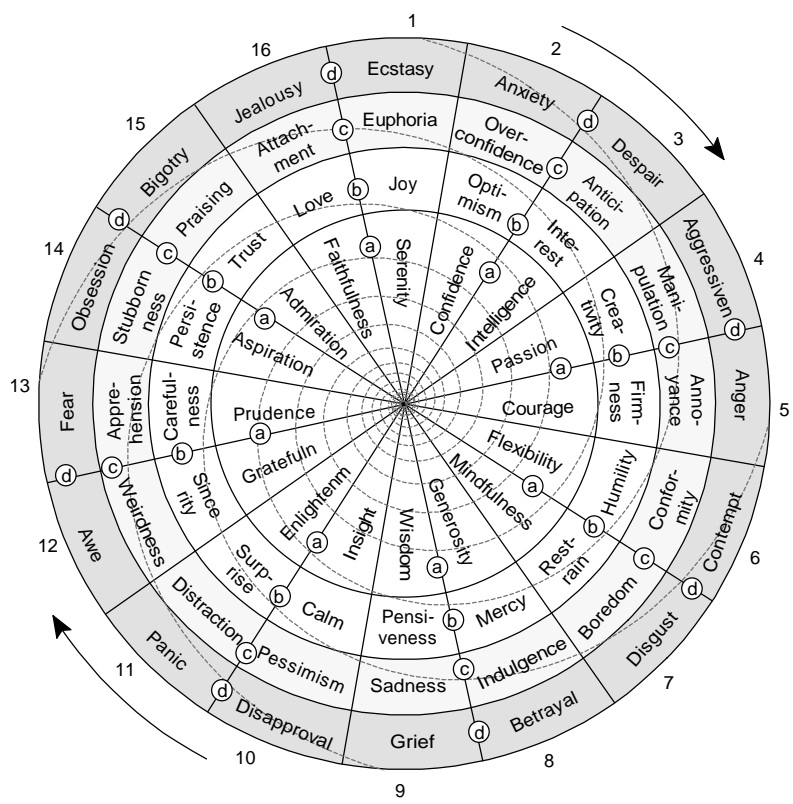


FIG. 9

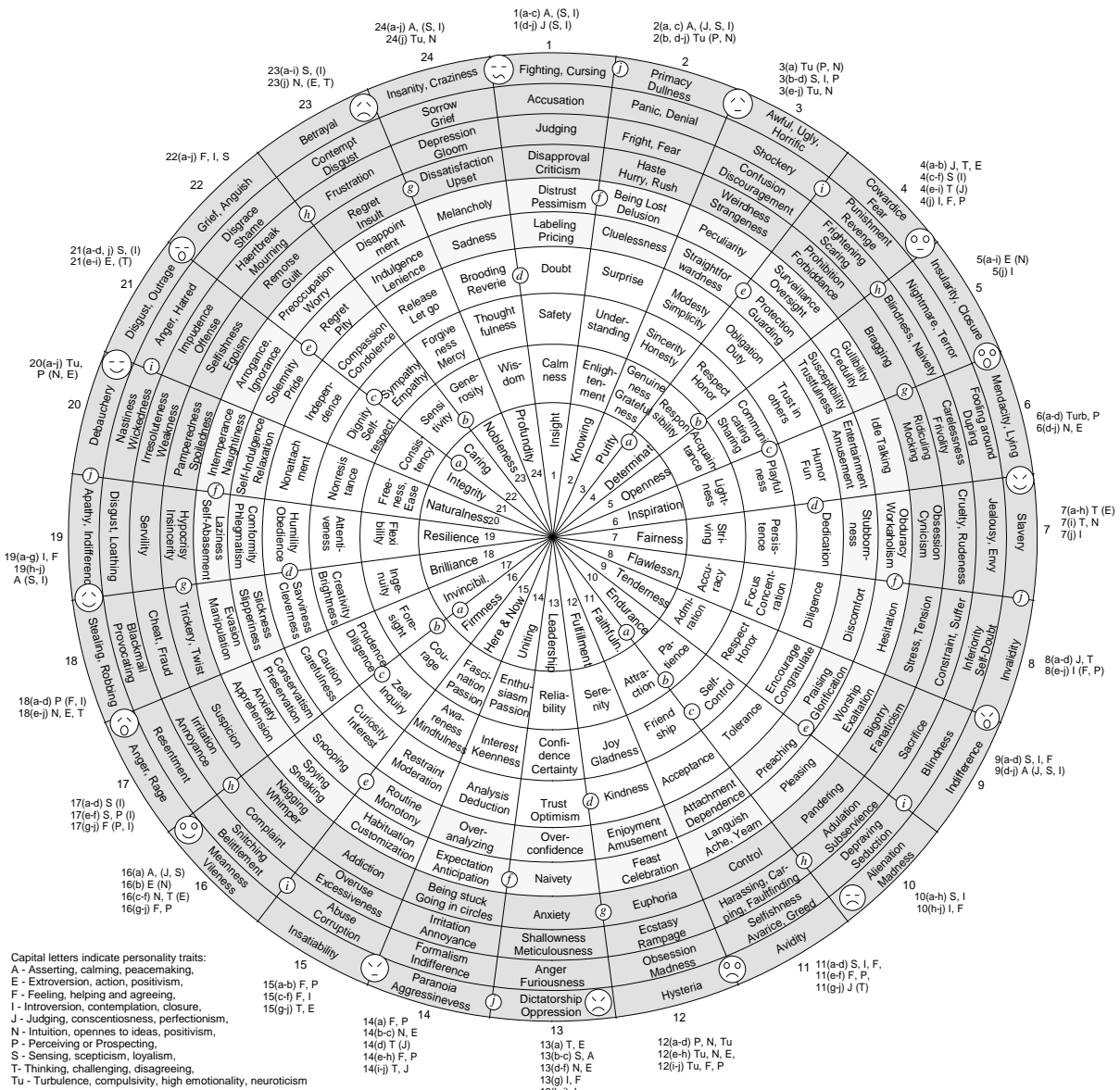


FIG. 11

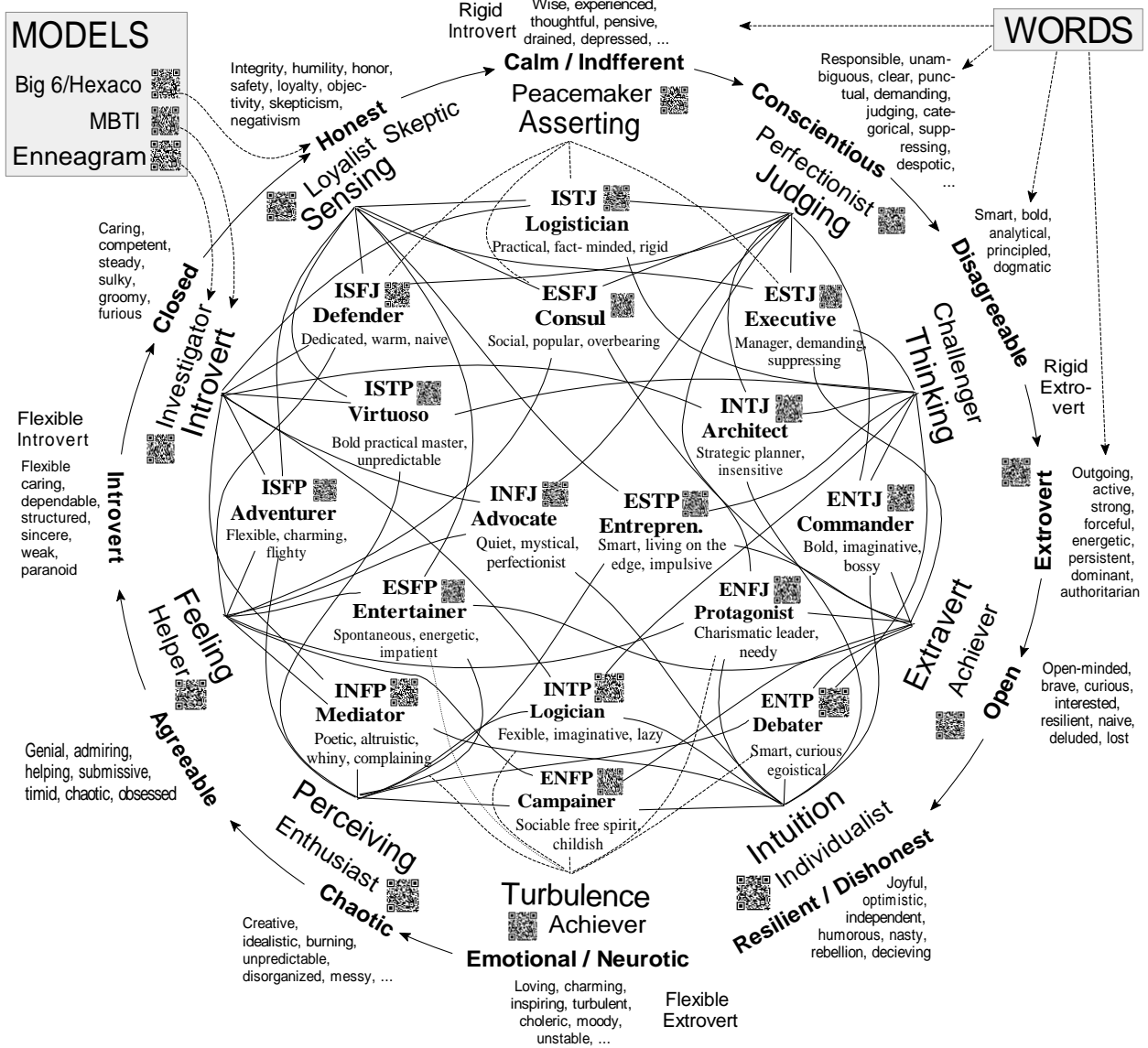


FIG. 12

BRIEF DESCRIPTION OF THE DRAWINGS

[0007] The description refers to provided drawings in which similar reference characters refer to similar parts throughout the different views, and in which:

[0008] FIG. 1 illustrates exemplary steps of constructing a dialectical wheel;

[0009] FIG. 2 illustrates dialectic wheels as squares and tables;

[0010] FIG. 3 illustrates analysis of a word Car by 3- and 2-level wheels;

- [0011] FIG. 4 illustrates analysis of phrases “God Exists” and “Feminism aims to correct biases”;
- [0012] FIG. 5 illustrates construction of 2 x 12 wheel from a word Love
- [0013] FIG. 6 illustrates construction of 2 x 12 wheel from a word Science
- [0014] FIG. 7 illustrates 3-dimensional causal networks obtained by merging two 2 x 12 wheels from FIGs 5 (H) and 6 (E);
- [0015] FIG. 8 illustrates Plutchik Wheel representing the inverted vortex (A) and an inverted wheel representing the realistic vortex (B);
- [0016] FIG. 9 illustrates expansion of the Inverted Plutchik Wheel;
- [0017] FIG. 10 illustrates a 4 x 12 wheel of characters obtained by merging smaller wheels of various personality models;
- [0018] FIG. 11 illustrates a 10 x 24 wheel of affective words, where each word is related to the character trait(s);
- [0019] FIG. 12 illustrates relations of words to character traits and personality types.

DETAILED DESCRIPTION OF THE PRESENT INVENTION

[0020] The innovation is now described with reference to the drawings, wherein like reference numerals are used to refer to like elements throughout. In the following description, for purposes of explanation, numerous specific details are set forth in order to provide a thorough understanding thereof. It may be evident, however, that the innovation can be practiced without these specific details. In other instances, well-known structures and devices are shown in block diagram form in order to facilitate a description thereof. Various embodiments are discussed hereinafter. It should be noted that the figures are described only to facilitate the description of the embodiments. They are not intended as an exhaustive description of the invention and do not limit the scope of the invention. Additionally, an illustrated embodiment need not have all the aspects or advantages shown. Thus, in other embodiments, any of the features described herein from different embodiments may be combined.

[0021] A given word or thesis is provided with its opposition or antithesis. Both the word and the opposition are provided with their positive and negative sides (“under- and over-developments”), that are further augmented to a concentric causal network (a “dialectic

wheel”). In the dialectic wheel, positive statements occur closer to each other in the center, where the positive statements can unite. If all positive sides are complimentary to each other, so that they naturally unite into some perpetual state without a special effort, then a person’s understanding of a given word or thesis is balanced and correct. Otherwise, the understanding is partial, biased, or false. The method of determining the understanding has many practical applications that are overviewed below.

[0022] FIG. 1 illustrates exemplary steps for generation of the dialectic wheel for an exemplary word “Love” using the method of the present invention in accordance with the disclosed architecture. Steps 1-3 in scheme (A) indicate generation of “negative” and “positive” sides of the given word “Love” (1a) and its opposition “Hatred” (3b). More specifically, Step 1 generates “negative” side 1b and step 2 generates “opposite” side 3b. It should be appreciated that there may be many different oppositions: Hatred, Resentment, Fear, and more, wherein each opposition would imply an independent dialectic wheel. (All such wheels can be united into a larger single network that models specific types of thinking, while still producing “higher common sense”, as will be shown below.) Step 3 generates positive of opposite side 3b. Steps 4 and 5 verify consistency of the results: 1b and 3b must be opposite to each other, whereas 1a and 3a must be mutually beneficial (“complimentary”). Ordering of the steps provided in scheme (A) are exemplary and steps can be performed in any given order. For example, scheme (A) can be started with step 2, then, continue with steps 3 and 5, and finished with steps 4 and 1.

[0023] Scheme (B) illustrates the obtained half-wheel 102 that can be used for generating the exemplary statements such as “Love (1a) is complimentary to Wisdom (3a). Love (1a) without Wisdom (3a) yields Insanity (1b). Wisdom (3a) without Love (1a) yields Hatred (3b). Insanity (1b) is Love (1a) without Wisdom (3a)” and more. Such sayings are generalized later in the disclosure.

[0024] Schema (C) is configured to construct the circular causation that can be either directed (follow strict order of transformations) or undirected (indifferent to the order of transformations). Using the circular causation, Calm 4a and Devoted 2a are included in the formation of the wheel. Schema (D) is similar to schema (A) but deals with “orthogonal” pair of oppositions. Apathy 4b is opposite of Devoted 2a and Fight 2b is opposite of Calm 4a.

[0025] Schema (E) is similar to Schema (C) but deals with “scalar” (linear) causation that is indifferent to the order of transformations. Scheme (F) shows the obtained wheel 104 for the exemplary word “Love” and Schema (G) has switched positions of negative sides (1b switched with 3b, 2b with 4b) in the updated wheel 106. The Schema (G) is useful for designing new concept mapping axes and hypotheses. Schema (H) shows an example of the semantic causality graph 108 (a kind of semantic similarity network) that could facilitate the method’s automation of the present invention. It can be obtained for any word by generalizing all types of its dialectic wheels.

[0026] FIG. 2 illustrates the square and tabular representation of the obtained wheel in FIG. 1. Here all steps are correlated with classic temperaments and elements. In accordance with the present invention, all wheels go through a set of quality control procedures that determine validity of the wheels.

[0027] Dialectic wheels may be constructed in different ways, depending on the starting thesis, available knowledge or purpose. For instance, when the starting thesis is clearly negative (like Hatred, War, Problem and more), then positive antipode (Acceptance, Peace, Solution and more) is looked for and searched. When the starting thesis is neutral (like Car, Water, Science and more), then, both positive and negative sides for itself and oppositions (as illustrated in FIGs 3 and 4) are determined. In many scenarios, complimentary words or theses like 3a are known beforehand (for example, from proverbs or famous quotes), then, words or thesis for circular causation like 2a and 4a connections are determined. When seeking the deeper philosophical meaning (e.g., in analytical philosophy and Humanistic therapy), two or more wheels with similar theses in positions 1a or 3a may be combined, yielding new wheels (in which Love may be complimentary to Courage, Confidence, Prudence, Truth, etc.). When designing new scientific scales and hypotheses, the wheel’s structure may be changed, as shown in Schema (G) in FIG. 1. Each segment defines a new scale and all scales are orthogonal to each other, expanding a starting thesis to a 4-dimensional space. When seeking to systemize complex knowledge, detailed wheels with more segments and layers are formed as shown in Figs 5 - 11. Such detailed wheels can be viewed as special kinds of periodic systems of knowledge, useful for indexing or tagging independent information. Sometimes a substantial part of the wheel can be gathered from the existing wise sayings (proverbs and quotes), independent observation or scientific literature.

For example, many ancient philosophies used four archetypal classic elements to explain patterns in nature. These elements correspond to certain steps of dialectic wheels (see FIG. 2, B), whereas most of natural patterns are cyclic (see FIG. 2, A). So, they can easily be presented as dialectic wheels. In psychology various circumplex models suggest new types of wheels (Plutchik, Conte, 1997). For example, Plutchik’s wheel (FIG. 8, A) can be converted into a dialectic wheel (FIG. 8, B). The tabular representation is represented in FIG.2, C.

[0028] Basic Quality Control - A valid wheel must pass a number of “quality control” checkups that are summarized in Table 1.

Table 1. Relations between cells in FIG. 1(F)

Cell	1a	2a	3a	4a	1b	2b	3b	4b
Cause of	2a	3a	4a	1a	2b	3b	4b	1b
Effect of	4a	1a	2a	3a	4b	1b	2b	3b
Complimentary to	3a	4a	1a	2a	3b	4b	1b	2b
Opposite of	3b	4b	1b	2b	3a	4a	1a	2a
Negative side of	-	-	-	-	1a	2a	3a	4a
Positive side of	1b	2b	3b	4b	-	-	-	-

[0029] For example, positive side of thesis (1a) must be opposite to negative side of antithesis (3b), and *vice versa*. Both positive sides of thesis and antithesis (1a and 3a, as well as 2a and 4a) must be complimentary to each other (Complementarity implies mutual enhancement, yielding more subtle forms of existence)

[0030] Overall, each row of Table 1 includes eight cells and each cell of a row is logically related to five of other seven cells. For satisfying the relations among cells, broader generalizations can be used. For example, Insanity (1b) may be replaced with Ignorance, the direct opposition of Wisdom (3a). Hatred and Resentment (3b) can be replaced with Self-righteousness, the “negative side” of Wisdom (3a). Many broader generalizations can be used in the present invention.

[0031] It should be noted that Table 1 corresponds to the wheel in FIG 1(F). If the wheel’s structure is changed (like in FIG. 1 (G) or Figs. 4-10), then the respective changes must also be reflected in Table 1 as well. (For example, if the wheel has N segments, then the

X-th segment will be compatible to / opposite of the $(X+N/2)$ -th segment. If it has 3 layers, then letter b should be replaced with c.)

[0032] The 5th Element Test: All positive sides (1a – 4a) of the wheel (both in FIG 1 (F) & (G)) must “stick together” into a naturally evolving system (the “5th element”). Negative sides should disobey this rule, as we cannot experience negative effects perpetually. When all positive sides are simultaneously and perpetually together, without a constant special effort, such a wheel brings true wisdom. In case if positive sides do not “stick” together, then, our decisions (goals and understandings) are either partial or false.

[0033] The “5th element” phenomena may be related to synchronicity of Jung and Pauli, as a “meaningful connection between phenomena beyond causal relations” (Kerr, 2013), and to synchronization of oscillators, where all elements are related to each other not just circularly, but also diagonally (Strogatz, 2003; O’Keeffe et al, 2017).

[0034] To pass “5th element” test, all positive sides (1a – 4a) must be equally dissimilar (orthogonal), yet complimentary to each other. Love, Devotion, Wisdom and Peace all satisfy this condition, as the resulting wise saying is meaningful enough: “Love encompasses Devotion, Wisdom and Peace. Otherwise, Love becomes Insanity”. (More of similar sayings will be provided later in the disclosure.) Omitting or replacing any word may reduce the validity of the wheel.

[0035] The respective negative sides – Insanity, Fanaticism, Resentment, Indifference may not stick together, as Fanaticism and Resentment contradict Indifference.

[0036] (In case of multi-segmented wheels, like in FIGs 5 – 11, the 5th element test requires that all positive words and theses form a natural causality pattern, yielding a self-regulating mechanism. Often (if not always) this pattern is opposite to the causal pattern of negative words and theses.)

[0037] Usability Test. The final test is seeing if the obtained wheel yields useful enough advice. Table 3 exemplifies generalized statements that can be gathered from any valid wheel.

Table 2. Generalized statements, where X denotes segment ‘s number

No	<i>a</i>	<i>b</i>
1	If you are in Xa, then seek $(X+2)$ a	Xb is “healed” by $(X+2)$ a

2	Xa without (X+2) a yields Xb	Xb is Xa without (X+2) a
3	Xa arises from (is complimentary to) (X+2) a	Xb arises from (is complimentary to) (X+2) b
4	Xa arises from (is complimentary to) (X+1) a and (X+3) a	Xb arises from (is complimentary to) (X+1) b and (X+3) b
5	(X+1) a and (X+3) a brings Xa	(X+1) b and (X+3) b brings Xb
6	Xa without (X+2) a yields Xb	Xb is Xa without (X+2) a
7	To get Xa, seek (X+1) a and (X+3) a	... avoid (X+1) b, (X+2) b, (X+3) b
8	Eternal Xa is (X+1) a, (X+2) a, (X+3) a	Xb is (X+1) b, (X+2) b, (X+3) b
9	Xa yields (X+1) a	Xb yields (X+2) b and (X+1) b or (X+3) b
10	Xa without (X+1) a yields (X+3) b	Xb is (X+1) a without (X+2) a
11	Xa without (X+3) a yields (X+1) b	Xb is (X+3) a without (X+2) a
12	To get Xa, seek (X+3) a	... avoid (X+3) b
13	If you are in Xa or Xb, then seek (X+3) a	... avoid (X+2) b and (X+3) b

[0038] For example, the first row of the 1st column (a) yields the following advice: “If you are in love, then seek wisdom. If you are devoted, then seek peace. If you are wise, then seek love. If you are in peace, then seek devotion”. The first row of the 2nd column (b) means the following: “Insanity is healed by wisdom. Fight is healed by peace. Hatred is healed by love. Apathy is healed by devotion”. Table 3 provides examples of combined statements.

Table 3. Examples of combined statements

If you (are / feel):	Then Seek:	Avoid:
(1a, b) Love, Passionate, Curious, Obsessed, Attached, Naive, Ignorant, etc	(2-3a) Devotion, Persistence, Action, Creation, Wisdom, Profundity, Experience, etc	(3-4b) Apathy, Sleepiness, Laziness, Conformity, etc.
(2a, b) Devoted, Persistent, Act, Create, Improvise, Stubborn, Fight, Abuse	(3-4a) Wisdom, Profundity, Experience, Peace, Calm, Dignity, Tranquility, Rest	(4-1b) Obsession, Insanity, Egoism, Ignorance, Insanity

(3a, b) Wise, Profound, Experienced, feel Hate, Fear, Resentment, Regret, Sickness	(4-1a) Peace, Calm, Dignity, Tranquility, Love, Passion, Admiration	(1-2b) Stubbornness, Fight, Abuse
(4a, b) Peaceful, Calm, Inactive, Dogmatic, Submissive, Conservative, Lazy, Sleepy	(1-2a) Love, Passion, Affection, Curiosity, Devotion, Persistence, Action, Creation	(2-3b) Hate, Fear, Resentment, Regret

[0039] For example, if you are in Love (Passionate, Curious, etc.), then seek Devotion (Persistence, Action, etc.), while avoiding Apathy (Sleepiness, Laziness, etc.). More sophisticated statements can be obtained from the wheels of more sophisticated theses (like in FIG. 4, see Interpreting Abstract Theses). The accuracy of each statement can be further increased by exploiting the More Detailed Wheels (FIGs 5 – 11). Compared to the famous language models (like BERT, GPT-3, Wu Dao), these statements are more concise and wiser. While the former reflects the “linear logic of majority”, the present invention follows the “dialectic of the wise”.

[0040] “**Mixed**” **Wheels:** Different wheels containing similar theses in 1a or 3a position can be combined into the “mixed” wheels. (All such wheels can be combined into just one causal network, which in turn can yield many smaller new wheels, as will be shown below). Consider Table 4, cases A – D.

Table 4. Combining interrelated wheels

		1 – Feeling, Possession	2 – Acting, Intention	3 – Sensing, Goal/Result	4 – Sharing, Reflecting
		Choleric	Sanguinic	Phlegmat	Melanchol
A	a	Love / Passion	Devotion	Wisdom	Peace / Calm
	b	Insanity / Ignorance	Fight / Abuse	Resentment	Apathy / Laziness
B	a	Bravery	Active / Smart	Wise/ Careful	Calm, Analytical
	b	Foolhardiness	Fight / Abusing	Fearful	Procrastinating
C	a	Desire	Action	Satisfaction	Sharing
	b	Frustration	Abuse	Indifference	Overbearing

D	a	Humble	Loyal	Special	Deep
	b	Mediocre	Fanatic/Shallow	Arrogant	Fuzzy
A-D-1	a	Love	Smartness	Satisfaction	Depth
	b	Frustration	Fanatic/Shallow	Resentment	Procrastinating
A-D-2	a	Humility	Action	Wisdom	Peace
	b	Ignorance	Rash / Abuse	Arrogance	Overbearing

[0041] The interrelated wheels were obtained as shown in FIG. 1, and they pass the 5th element test as described earlier. Love (A-1a) yields Wisdom (A-3a and B-3a) that in turn yields Bravery (B-1a). In parallel, Love also yields Desire (C-1a), whereas Wisdom yields Humility (D-1a). Because of such interrelations, all of these wheels can be combined into many new wheels. Cases A-D-1 and A-D-2 provide just two examples.

[0042] Case A-D-1 suggests that “Love (A-1a) is Smartness (B-1a), Satisfaction (C- 1a) and Depth (D-1a). Love without Satisfaction (C-3a) brings Frustration (C-1b)”. And so on. Case A-D-2 yields: “Humility means Action, Wisdom, Peace. Humility without Wisdom yields Ignorance”.

[0043] Mixed wheels uncover the deeper relations between seemingly unrelated concepts (e.g., Truth ~ Acceptance ~ Beauty ~ Subtleness), as well as conducting self-analysis and solving dilemmas. (For example, am I in Love or Affection? Love brings Wisdom, Affection brings Resentment. Am I Wise or (potentially) Resented? Wisdom brings Bravery, Resentment brings Foolhardiness. Am I Brave or Foolhardy? Bravery brings Prudence, Foolhardiness – Fear or Conservatism. And so on. See Solving Dilemmas for a more fundamental approach).

[0044] Personal Development: Tables 2 – 4 yield countless advice for various situations (e.g., “To overcome Fear, be Active and Analytical”). Table 4 can be extended infinitely, covering all existing words and theses, and thus suggesting wise advice for all types of situations. Table 4 also helps identifying our inner state (e.g., Confidence vs. Overconfidence, Compassion vs. Being Pathetic, etc.), defeating linear thinking, finding the best explanations, solving dilemmas, changing attitudes and more (see below).

[0045] Invalid Wheels: Table 5 provides examples of invalid wheels that falsely treat negative sides as positive, thus replacing natural evolvement with the “stoic fight”.

Table 5. Examples of Invalid wheels

		1 – Feeling, Possession	2 – Acting, Intention	3 – Sensing, Goal/Result	4 – Sharing, Reflecting
		Choleric	Sanguinic	Phlegmat	Melanchol
A	a	<i>Excited</i>	<i>Calm</i>	<i>Thoughtful</i>	<i>Successful</i>
	b	<i>Euphoric</i>	<i>Disappointed</i>	<i>Depressed</i>	<i>Turbulent</i>
B	a	<i>Principled</i>	<i>Tough</i>	<i>Lenient</i>	<i>Secure</i>
	b	<i>Despotic</i>	<i>Desperate</i>	<i>Indifferent</i>	<i>Weak</i>
C	a	<i>Threat</i>	<i>Alert</i>	<i>Courage</i>	<i>Relief</i>
	b	<i>Fear of Worse</i>	<i>Wariness</i>	<i>Safety</i>	<i>Recklessness</i>

[0046] Case A represents the seemingly correct logical sequence (Excitement – Calming– Thoughtfulness – Success) that can only work for a short time. The reason is that Excitement (A-1a) is incompatible with Thoughtfulness (A-3a). Although Excitement without Thoughtfulness gives Euphoria (A-1b), yet Thoughtfulness without Excitement may not give Depression (A-3b).

[0047] Wheel B shows how we fool ourselves by “rebranding” Despotism (B-1b) to “Principledness” (B-1a). The latter yields Thoughtfulness (B-3a), which is often replaced with Lenience (B-3a). Although Lenience without Principledness yields Indifference, yet Principledness without Lenience may not yield Despotism.

[0048] Wheel C shows how the fear-driven logics presents Threat (C-1a) as a positive side, whereas Safety (C-3b) as negative. Such a perversion happens whenever we pursue Safety out of the “Fear of Worse” (C-1b). Although Threat without Courage yields Fear, and Courage without Threat yields Safety, yet both of these statements are tautological. (Threat yields Fear independently of Courage, as well as Courage yields Safety independently of Threat.)

[0049] Another type of invalid wheels occurs due to the “inverted thinking”, when oppositions are expected to cause just struggle, but not complement each other and unite. [See Unmasking Linear Thinking, Analyzing Neutral Words, Discriminating Interpretations, and Plutchik’s wheel in FIG. 8, A, for examples.](#)

[0050] Unmasking Linear Thinking. Dialectic wheels help spotting potential discoveries through defeating the linear thinking. Table 6 provides examples.

Table 6. Linear Logic vs. Dialectic

		1 – Feeling, Possession	2 – Acting, Intention	3 – Sensing, Goal/Result	4 – Sharing, Reflecting
A	a	Many Choices	Try All	Find the Best	Calm / Relief
	b	Go with Any	Rush / Stress	Few to None	Give Up
B	a	Compound Library	Screening	Active Lead	Selecting
	b	Impotent	Guesswork	Toxic	Preserving
C	a	Natural Cure	Dialectic	Solving / Healing	Easy / Cheap
	b	Problem / Toxic	Difficult / Expense	Synthetic/Kitschy	Linear Logic
D	a	Simple Pencil	<i>As Above</i>	Weightless Writing	<i>As Above</i>
	b	Usual Writing		Complex Pen	

[0051] Wheel A refers to a “problem of many choices” (A-1a). Linear logics suggests Trying them All (A-2a), until finding the “Best” (A-3a). This makes A-1a incompatible with A-3a, and A-2a incompatible with A-4a. Yet, wheel D from Table 4 suggests an opposite: sticking with Humility (4-D-1a) and Loyalty (4-D-2a), until finding something Special (4-D-3a).

[0052] Wheel B shows how it works in practice, using Drug Design as an example. Large compound libraries (involving millions of compounds) (E-1a) are screened in order to find the best Active Lead (E-3a). This is comparable to looking for needle in a haystack. It cannot pass the 5th element test due to the rigidity of the high-throughput screening and drug design setups (Klein, 2008).

[0053] Wheel C suggests [replacing compound libraries with](#) proven remedies from other fields of medicine, cultural traditions, or general wildlife (C-1a) and Dialectic Thinking (C-3a). It suggests that “Dialectic is what helps us finding natural solutions in disregarded sides of simple things. Linear thinking is what creates artificial problems through over-rated benefits of complex things.

[0054] Wheel D provides an example of Dialectic thinking from anecdotal legend that NASA developed an expensive pen for writing at zero gravity, while Soviets used pencils (Fact or Fiction? NASA Spent Millions to Develop a Pen). Although this legend may be false, it clearly shows the hidden benefits of dialectic thinking.

[0055] Analyzing Neutral Words. If the starting word or thesis is “neutral” or carry variable sentiment (like Car), then we have to identify both positive and negative sides of thesis and antithesis, as shown in FIG. 3(A). As illustrated in FIG.3, case (A) places Car and its antithesis (“No Car”) in the neutral area (1*b* and 3*b*, respectively). 1*a* and 3*a* list their positive sides, 1*c* and 3*c* are negative sides. All rules from Tables 1 and 2 remain operative (with small letter *b* changed to *c*). The obtained wheel generates the following maxim: “Car brings speed, pleasure and convenience in exchange to the cost, pollution, danger of accidents, and unhealthy lifestyle. In order to drive it, you have to be Thoughtful, Careful, Trained and Fit”. Yet it does not pass the 5th element test, as Pleasure, Speed and Pride with Safety, Zero Expense, Health and Ecology can be hardly combined.

[0056] Schemes B and C show the usual 2-level wheels in which a Car is taken sequentially as a positive and negative phenomenon. Wheel B has all the same obstacles as wheel A, since a Car is incompatible with words Free, Health and Clean. Wheel C has no such obstacles, as Walking is compatible with all such words. Walking is not as fast as riding a car, yet the speed is just a matter of an attitude.

[0057] Solving Dilemmas. The 3-level wheel (on FIG. 3, A) helps solving the following dilemma: to ride a car or to walk by legs? Just answer two questions: 1) Does Health and Cost-Effectiveness (1*a*) outweigh Speed and Excitement (3*a*)? and 2) What is easier: Training / Running (2*a*) or Thinking / Caring (4*a*)? Wheels B and C paraphrase it: What is easier: to drive healthily, cleanly and for free, or to walk quickly enough, proudly and conveniently? This may hint on how to shift the paradigm. Table 7 provides more examples of solving dilemmas.

Table 7. Solving Dilemmas

		1 – Feeling, Possession	2 – Acting, Intention	3 – Sensing, Goal/Result	4 – Sharing, Reflecting
A	a	1st Positive	Striving	2nd Positive	Adapting
	b	1st Alternative	Action	2nd Alternative	Thinking

	c	1st Negative	Shallow, Fighting	2nd Negative	Indifference
B	a	Pleasure, Arousal	Active Lifestyle	Health, Wellness	Ease, Relief
	b	Meat eater	Mindfulness	Vegetarian	Obliviousness
	c	Sickness, Cruelty	Self-abasement	Bore, Misery	Lazy, Apathy
C	a	Healthy	Hardened	Immune/Mature	Upraise
	b	No Vaccine	Get Cold	Get Vaccine	Get Virus
	c	Immature	Fall	Sick	Softened/Spoiled
D	a	Coziness	Fast Result	Scenery View	Humane, Cheap
	b	Live in Garden	Cut Trees, Dig Pond	Live near Lake	Plant Trees
	c	Crowded Views	Expensive, Cruel	Strong Winds	Long Wait
E	a	Subtle, Gentle	Create, Earn	Tough, Mighty	Help / Share
	b	Art, Science	Focus, Fight	Business, Warrior	Relax
	c	Weak, Pathetic	Stress, Abuse	Rude, Bossy	Stagnate
F	a	Brave, Genuine	Striving	Wise, Careful	Precision
	b	Subjective	Acting	Objective	Calm
	c	Naive, Deluded	Fighting	Fearful	Lazy
G	a	Bold / Tough	Survival Skills	Prudent	Continuity
	b	Overconfident	Danger / Risk	Cautious	Safety
	c	Foolhardiness	Stress / Disaster	Coward	Stagnation
H	a	Gentleness	Strive	Meat	Peaceful
	b	Animal Rights	Protest	Slaughter	Struggle
	c	Rigidness	Fight	Greed, Cruelty	Neglect
I	a	Wellness/Climate	Eco-Lodges	Easy Money	Conservation
	b	Natural Forests	Infrastructure development	Plantations	Zoning
	c	Little Money	Clear-cutting	Sickness/Disaster	Exhaust

[0058] Case A shows the general method. Write the two alternative decisions in the opposite grey cells (1-b and 3-b), their positive and negative sides in the respective white and

red cells. Connect both positive and negative sides by the causal relations (2a and 4a, 2b and 4b). Decide what is more important (1a or 3a) and what is easier (2a or 4a). Think how to unite all positive sides (1-4a) into the “5th element”.

[0059] Case B asks if it is better to be an omnivore (meat eater) or vegetarian. What is more important: a sense of full stomach (instant satisfaction) or overall health and wellness? (Google vegetarians vs meat eaters.) What is easier: to conquer an instant desire or chronic disease? (Google meat eaters’ chronic disease – diabetes, cardiovascular, Alzheimer’s, various types of cancer.)

[0060] Case C asks if it is worth of getting vaccinated. Whom do you trust more: your own health (C-1a) or expert opinion (C-3a)? How it is better to strengthen your immune system: by increasing your discipline / exposing to the cold (C-2a, see Iceman on virus, scientific proof: Muzik et al, 2018) or by exposing to virus (C-4a)? (In other words, what is easier to control: your own temper (1a, 2a) or virus (3a, 4a)? Are you sustainable by yourself or need a support? What kind of support: physical, moral, motivational?)

[0061] Case D considers, whether it is better to buy a house in the garden (D-1a) or near the lake (D-3b). Does garden coziness outweigh lakeview? If no, then: Does fast yet cruel tree-cutting (possibly with pond-digging) outweigh humane yet long-lasting wind-fighting with garden-growing? This will determine how to combine both garden coziness and scenery views in a single solution.

[0062] Case E asks, if it is better to become an artist (scientist, philosopher) or a businessman (earn money, become a warrior). What is more important: learning or earning? What is easier: conquering yourself or creating something new? Many career assessment tools ask similar questions while disregarding the common goal of all choices (perpetual causality Subtle – Creative –Tough – Sharing; see Optimizing Character Traits for further hints).

[0063] Case F asks if Subjectivity is worse than Objectivity. The question comes down to the following: Do you need more Genuine Braveness (C-1a) or Wise Carefulness (C-3a)? Is it easier for you to Strive in Action (C-2a) or to be Calm and Precise (C-4a)?

[0064] Case G asks if kids should be able to engage in risky activities (climbing trees, playing cards, exploring the unknown). Do you want your kids to grow bold (develop autonomous learning & survival skills) or be more obedient and considerate? What is easier:

engage in all activities of kids, or prohibit any dangerous activities, while leaving them alone?

[0065] “Educative” Negotiation. The proposed method can be used in negotiations, to educate the opposing side. For example, case H in Table 7 explains motivation of Animal Rights activists, who prefer Gentleness over Animal Meat (google slaughter cruelty). Even though Slaughter is claimed to be “humane”, the positive side of Meat looks like a false claim (consider case B in Table 6). Case B can easily pass the 5th element test, whereas case H cannot, as Meat is hardly compatible with Gentleness, Health and Wellness.

[0066] Case I explains motivation of Nature activists, who prefer common wellness over easy money and cheap timber. Industry produces money from plantations that cannot match psychological wellness and climate regulation of natural forests. The solution could be in Eco-Lodging, that merges both sides (generates money and preserves nature, google logging and eco-lodging). Loggers maintain own arguments (google why logging is good) that very likely cannot pass the 5th element test. Such proofs must be provided by the Nature activists who seek to educate their opponents.

[0067] Cases C and G explain motivation of Human Rights activists, who prefer freedom over government control. They would have to demonstrate that opposition ‘s arguments fail to pass the 5th element test.

[0068] Humanistic / Gestalt Therapy. Dialectic wheels help changing attitudes and achieving psychological relief. (“Human beings can alter their lives by altering their attitudes” – William James.) For example, in case of outrage, hatred or self-reproach, recall that every guilt is shared between the victim and aggressor. Draw a wheel of your concern and observe your changing attitude. Table 8 provides examples of Gestalt Therapy.

Table 8. Transforming blame into analysis

		1 – Feeling, Possession	2 – Acting, Intention	3 – Sensing, Goal/Result	4 – Sharing, Reflecting
A	a	Internal Lesson	Internal Growth	External Lesson	External Growth
	b	Aggressor	Praying, Penitence	Victim	Training, Striving
	c	External Abuse	External Fall	Internal Abuse	Internal Fall
B	a	Lesson, Wisdom	Maturation	Love, Creation	Success

	b	Brutal World	Praying	Gentle Me	Striving
	c	Harm, Suffer	Failing, Loosing	Self-Indulgence	Giving Up
C	a	Lesson, Wisdom	Hear the World	Self-Respect	Understand Yourself
	b	Guilty Me	Listen to World	Innocent World	Listen to Inner
	c	Self-Reproach	Ignore Inner Self	Overconfidence	Ignore the World

[0069] Case A compares an aggressor to his victim. Both undergo symmetric transformations, as the Internal (spiritual) and External (physical) worlds are comparable to the real (± 1) and imaginary ($\pm i$) axes of complex numbers. These describe all types of misery of victim and aggressor ($1c = (+1; -i)$, $2c = (-1; -i)$, $3c = (-1; +i)$, $4c = (+1; +i)$). A victim should recall that aggressor is his mirror reflection. Balancing yourself automatically balances the opponent.

[0070] Case B compares the Brutal World (Enemies, Wrong-Doers) to Gentle Me (my Friends and followers). It is nearly identical to case A. When you harshly hate or blame somebody, recall that he is your teacher, whereas those whom you admire can make you blind.

[0071] Case C compares Guilty Me (a Kid or Student) to the Innocent World (Parent, Adult, Teacher). The World (C-3b) teaches Me (C-1b), while I teach the World. When you harshly hate or blame yourself, recall that Self-Reproach damages those whom you care about the most. The Guilty Me (C-1b) is comparable to Aggressor (A-1b), whereas the Innocent World (C-3b) equates the Victim (A-3b). The Guilty Me is opposite to the Gentle Me (B-3b), so Self-Reproach is complementary (thus, equivalent) to Self-Indulging.

[0072] Interpreting Abstract Theses. Dialectic wheels help clarifying the deeper meaning of abstract theses (especially if they are new to us). For instance, FIG. 4(A) shows the wheel for a phrase “God Exists”. It yields typical moral maxims: “God exists, because I trust. God does not exist, because I don’t care. Friendliness of the world without my responsibility makes me fanatic.” And so on. These maxims are trickier than earlier, because the positive and negative sides of the given phrase are more difficult to determine.

[0073] God is dialectically similar to words Heart, Trust, Love, Happiness, Subtlety, Courage, *etc.* We can say that God exists in your Heart (Trust, Love, *etc.*), when you feel your Heart, through your Heart, because of Heart, *etc.* The opposite statement – “God does

not exist” – is dialectically similar to Heartlessness, Hatred, Denial, Rudeness, Fear, *etc.* So, God does not exist in Hatred, when you Hate, through Hate, because of Hate.

[0074] FIG. 4(B) analyses phrase “Feminism aims to correct biases”. The word “correct” was replaced with “reduce” and “increase”. The consequential (orthogonal) words question if Biases imply Natural Differences and if Equality implies Lack of Gender. Two YES-es yield Rude Woman and Weak Man. Two NO-pes yield Tough Man and Subtle Woman. The resulting wheel generates statements like these: “Tough man make woman happy. Subtle women make man happy. Weak man abuse woman. Rude women abuse man.”

[0075] Discriminating Interpretations. Dialectic wheels help selecting the best interpretation from two or more alternatives. Consider the Mouse Utopia Experiment, when unlimited resources caused the population’s self-extermination. The most typical explanation is that population grows too fast, therefore it must be physically suppressed (see Table 9, wheel A). Another explanation is that unlimited conveniences cause moral degradation, so we must change our attitude toward conveniences and the Life in general. Instead of exterminating the Life (through suppressing population’s growth), we should celebrate its value and fight for internal growth (see Table 9, wheel B). Wheel (A) can hardly pass the "5th element test", as healthy population (4a) contradicts to the birth control (2a). Wheel (B) does not have this problem, as the Self-invoked Personal Struggle (2a) is complimentary to the Family sense (4a). So it can be used to generate the following moral statements: "Limitless resources without morality yield self-extermination. Family sense without personal struggle yield immaturity and pampering".

Table 9. Two interpretations of the Mouse Utopia Experiment

		1	2	3	4
A	a	Unlimited resources, convenience	Population control	Small enough population	Mental / physical health
	b	Too large population	Mental / physical suffer	Limited resources, inconvenience	Uncontrolled population growth
B	a	Unlimited resources, convenience	Struggle, internal growth	Moral prosperity, enough space for all	Sense of family, caring
	b	Moral degradation	Sense of enemy,	Limited resources,	Immaturity,

			fight	inconvenience	pampering
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[0076] The above example illustrates how Dialectic wheels can enhance the Case-Based Reasoning that is widely used in AI design (e.g., see Richter and Weber, 2013). All empirical cases can be converted to dialectic wheels (as exemplified in Table 9), that can be converted to moral maxims. All dialectic wheels can be merged into a global causal network, that can facilitate revising and re-using new cases. (See More Detailed Wheels on how different wheels can yield a larger wheel, representing a single network.)

[0077] Designing Axes for Concept Mapping. Dialectic wheels expand any given parameter into a 4-dimensional space, which can be useful in business, economy, sociology, philosophy, psychology and similar fields.

[0078] Table 10 provides examples. Each pair of white and red cells in a given column (X_a and X_b positions) contain thesis and antithesis, that in combination describe a certain scale. (Note that all other tables place thesis and antithesis in “diagonal” columns, X_a and $(X_{\pm 2})_b$.)

Table 10. Dialectic Wheels as Orthogonal Scales (X_b replaced with $(X_{\pm 2})_b$)

		1 – Feeling, Possession	2 – Acting, Intention	3 – Sensing, Goal/Result	4 – Sharing, Reflecting
		Choleric	Sanguinic	Phlegmatic	Melancholic
A	a	Given Parameter	Expandability	N Dimensions	Elasticity, Adaptability
	b	Immeasurability	Unscalability	Abstraction	Rigidity
A*	a	Length	<i>Same</i>	Width	<i>Same</i>
	b	Too small/large	Too Narrow / Wide	Too small/large	
B	a	Money	Calm	Diversity, Breath	Discipline, Agility
	b	Poverty	Stress	Rigidity, Fixation	Looseness
C	a	Cost-Effective	Naturalness	Dialectic	Efficiency, Skill
	b	High Expense	Artificial, Fake	Linear Thinking	Awkward
D	a	Feasibility	Clarity	Generality	Subtlety, Beauty

	b	Impossibility	Obscurity	Narrowness	Rudeness
E	a	Acceptance	Truthfulness	Carefulness	Subtlety, Beauty
	b	Denial	Deception	Negligence	Brutality
F	a	Pleasure	Arousal	Wisdom, Maturity	Subtlety, Gentleness
	b	Aversion	Sleeping	Insanity	Rudeness, Intensity

[0079] Wheel A considers the most general scenario, when a given property (A-1a) is complimentary to many other orthogonal parameters, denoted as N-Dimensions (A-3a). For example, when measuring a length of a complex body (A*-1a), we may also consider its width, depth, shape, weigh, smell, and so on (A*-3a). This automatically yields two more parameters: Expandability or Scalability (A-2a) – how easily 1a transforms to 3a, and Adaptability or Elasticity (A-4a) – how easily 3a gets back to 1a. Below we will clarify the particular meaning of these parameters using specific examples.

[0080] Wheel B considers Money (B-1a), as the major parameter in business and economy. Most people expect Money to be complementary to the Diversity, Breath and Quality of Life (B-3a). The latter is maximized, when Money yield Calm and Confidence (B-2a), as opposed to Stress and Anxiety (B-2b). Quality of Life yields Money through Discipline and Agility (B-4a). Here Scalability (A-2a) represents Calm and Confidence (B-2a), Adaptability (A-4a) – Discipline and Agility (B-4a).

[0081] So, for business and economy to become ‘true sciences’ they must learn to measure Calm (“quality of emotion”), Diversity (“quality of life”) and Agility (“quality of thoughts”). (In the absence of such an understanding, the United Nations established Happiness Index, UK and Japan – Ministry of Loneliness, UAE – Ministry of Happiness, Bhutan – Gross National Happiness Commission. All of them attempt to compensate for the missing 3 parameters).

[0082] Wheel C considers Cost-effectiveness of Dialectical Thinking. Here Expandability (A-2a) equates to Naturalness (C-2a), Adaptability (A-4a) – to Skillfulness (C-3a). So, to be cost-effective, we must live Naturally, think Dialectically, act Skillfully.

[0083] Wheels D and E come from analysis of starting words Clarity (D-2a, shifted by one position) and Truth (E-2a). Here Expandability (A-2a) equates to Clarity or Transparency (D-2a) and Truthfulness (E-2a), Adaptability (A-4a) – to Subtlety and Beauty

(D-4a). So, to analyze productively, we must think Clearly / Truthfully, Generally / Carefully, aiming at Subtlety and Beauty.

[0084] Wheel F comes from the 2- and 3-dimensional models of emotions, suggesting that all emotions differ by Pleasantness or Valence (F-1a) and Arousal or Awokenness (F-2a). Pleasantness (F-1a) must be balanced by Wisdom or Maturity (F-3a), as excessive pleasantness indicates immaturity, whereas excessive seriousness causes aversion. Arousal (F-2a) must be balanced by Subtlety (F-4a), as excessive energy causes brutality, whereas indolent subtlety is pathetic.

[0085] Arousal (F-2a) differs from Intensity (F-4b), as some emotions may be intense, but fatiguing (*e.g.*, Depression or Grievance), whereas others may be gentle, but energizing (*e.g.*, Serenity or Faith). This also marks the difference between Expandability (A-2a) and Adaptability (A-4a). Many psychologists supported such differentiation (thus suggesting 3-dimensional scales, *e.g.*, Wundt 1897, Schlosberg 1954, Osgood et al 1957, Lyusin, 2018), but none of them consider the 4th axis – Maturity or Wisdom. So, for psychology to become a ‘true science’ it must learn to measure Wisdom

[0086] Re-interpreting The World. Dialectic wheels help grasping the deeper meaning of various phenomena through relating them to the classic elements (Aristotelean doctrine). Table 11 provides an example.

Table 11. Correlations of Classic Elements

		1 – Feeling, Possession	2 – Acting, Intention	3 – Sensing, Goal/Result	4 – Sharing, Reflecting
A	Temperament	Choleric	Sanguinic	Phlegmatic	Melancholic
B	Classic elements	Fire	Air	Earth	Water
C	States of matter	Plasma	Gas	Solid	Liquid
D	Physics	Entropy	Kinetic Energy	Enthalpy	Potent. Energy
E	Dialectic wheel for ‘Live’	Live - Die	Create - Destroy	Wise - Dull	Will - Force
F	Dialectic wheel for ‘Flexible’	Flexible - Rigid	Create - Destroy	Order - Chaos	Transform - Spoil

[0087] Rows A – C relate dialectic wheels to temperaments, classic elements and states of matter. Row D relates them to the two pairs of physical concepts: Entropy (D-1) and Enthalpy (D-3) on the one hand, and Kinetic and Potential energies (D-2 and D-4) on the other. These pairs are never mixed together, because thermodynamic stands separately from kinetics and kinematics. But here they are combined, due to correlation with dialectic wheels in rows E and F.

[0088] Rows E and F represent dialectic wheels (in a form of 4-D spaces) that explain the meanings of Life and Flexibility. Entropy can be equated to Life (D-1a) and Flexibility (E-1a), contrary to the long belief that it measures Chaos (England, 2020). Enthalpy can be equated to Wisdom (D-3a) and Order (E-3a), that does not oppose Entropy, but complements it. Kinetic energy compares to Creation (D, E- 2a), Potential energy – to Will (D-4a) and Transformation (E-4a). These also complement each other, although the classic physics considers them as oppositions (within the energy conservation law).

[0089] Designing More Detailed Wheels. Any wheel can be expanded, by adding intermediate segments and layers, as shown in FIGs 5 – 11. Such wheels must satisfy two conditions. First, all of their segments (pairs of positive and negative words, or theses and antitheses) must be orthogonal to each other, yielding different enough moral statements. Second, all words (and theses) must form a homeostatic (self-regulating) circular causation, reflecting some naturally occurring sequence(s) of transformations.

[0090] In other words, in order to harvest something, we must first plant something, then water it, and so on. Changing the order will make harvesting impossible. A high dimensionality of ontological space implies deep non-commutativity and non-associativity of transformations, thus strict sequence(s) of causality. Many valid sequences yield a multi-dimensional causal network.

[0091] Merging Interrelated Wheels. FIG. 5 exemplifies the generation of larger wheels from smaller ones that are related to the word “Love”. Curved dotted arrows show specific relationships among the smaller wheels. In wheel A, Love is complimentary to Wisdom. In wheel B, Wisdom is complimentary to Courage, and so forth. (This can be viewed as “widening interpretational space”.)

[0092] The larger wheels (E – H) explain how Love naturally transforms to various other virtues, and how the lack of such transformations creates various sins and scandals. Consider

the sequence of positive words in clockwise direction: Loving (1) – Devotion (2) – Courage (3) –... Consider the sequence of negative words in counter-clockwise direction: Insanity (1) - Spying (12) - Abasement (11) - ...

[0093] FIG. 6 exemplifies generation of larger wheels from the word “Science”. We first generate smaller wheels from various associations of Science (Theory, Hypothesis, Truth, and so on). We then combine them into (D) and (E). Scheme (F) is just another representation of (E), stressing the fact that all positive words have independent “dialectical twins”.

[0094] Positive words of FIG. 6 (D – F) tell the following story (in clockwise direction): Science (Theory, 1) yields Design (Deduction, 2), that further yields Observation (Experiment, 3), and so forth. Each word is associated with its “dialectical twin” (listed above in parentheses), which is generally not always perceived in such a way. For example, Science is often perceived not as a Theory, but rather as the “Final Truth”, which indicates its confusion with Dogmatism. Design is often perceived not as Deduction, but rather as Induction, which points to its confusion with Hypothesis. And so on.

[0095] “Dialectical twins” represent mutually complimentary words or theses that do not fit into standard 2-dimensional wheel. We therefore obtain a 3-dimensional network, as exemplified in FIG. 6 (F). Here dashed lines connect parallel planes of 2-dimensional wheels. Positive words of each wheel follow clockwise causation. Both of these causations can be mixed in any desirable way. They share common “negative” causation that rotates in opposite direction.

[0096] Negative words in FIG. 6 (D – F) explain how dogmatic thinking leads to destruction (in counter-clockwise direction). In short, Dogma (1) breeds Indifference (12), which in turn breeds "unintentional" Lies (10), Falsification (3) and Destruction (2).

[0097] Multidimensional Causal Networks. Standard wheel becomes a multidimensional network, if its nodes participate in more than one causal transformation(s), that cannot be described on a 2-dimensional plane. We saw this above during merging interrelated wheels (FIG 6 (F)), but more often they occur during merging independent wheels that are barely related. Such networks can be useful for modeling various worldviews and doctrines.

[0098] FIG 7 shows two representative ways of merging large (2 x 12) wheels from seemingly unrelated words, Love (from FIG. 5 (H)) and Science (from FIG. 6 (E)). White circles indicate words (theses) from the first wheel (FIG. 5 H), black circles – from the second wheel (FIG. 6 E). Arrows denote causal transformations of positive words. Negative words appear in parentheses (and transform in opposite direction).

[0099] Cases A and B use different sets of similar words in orthogonal positions. Case A yields two opposite causality directions, thus forming “local” loops with “shaky” moral statements. Case B yields just one causality direction with “higher moral standards”. Table 12 compares their moral statements using the following phrase: “Freedom (white 8) without X yields Betrayal.” Different loops from scheme A produce different X (Design, Boldness, *etc.*), creating risk of “double standards”. In contrast, different loops from scheme B produce invariable X = Truth (although there is still some room for flexibility, as Truth is dialectically bond to Devotion, as will be explained below.)

Table 12. “Locality” effects in FIG. 7: “Freedom without X yields Treason”

Scheme	Loop length	Black nr	White nr	X
A	6	1 – 4	7 – 10	Design (black 2)
A	12	1 – 7	4 – 10	Boldness (black 5)
A	18	1 – 10	1 – 10	Creation (black 8)
A	24	1 – 12	1 – 12	Prudence (black 11)
B	12	Any	Any	Truth (black 4)

[00100] Local loops distort the "reverse" causality between positive and negative theses, indirectly pushing us to the edges of the parent wheels. On the contrary, "global loops" reinforce the interconnectedness of positive theses, thereby pulling us to the common center of parental wheels. (In other words, widening the worldview strengthens moral wisdom.)

[00101] Scheme B provides 12 pairs of “dialectical cousins”, denoted by dashed lines between the neighboring black and white circles. They represent “secondary complementarities” that explain each other’s meanings from a new perspective. For example, “Truth (black 2) without Devotion (white 4) yields Ugliness. Science (black 1) without Humility (white 11) yields Dogma”. Such relations, along with “primary” complementarities

and “dialectical twins” from simpler wheels, can help designing the “universal complementarity” algorithms that yield the most preferable causal networks and the best advices for given predispositions.

[00102] Thus, the best merger is the one that yields the maximum similarity and complementarity of neighboring words and theses, ensuring their maximum interconnectedness, diversity and concentricity. Such networks can form the basis of “Artificial Honesty”.

[00103] Other mergers (like in FIG. 7 (A)) may also be useful, as they can model various real-life biases in psychology, politics, and science. Table 12 indicates that “local loops” can yield quite meaningful statements, although of a narrower scope than “global loops” do. This suggests that “local loops” can model subjective / linear thinking, whereas “global loops” can model objective / dialectical thinking.

[00104] (For example, the fact that we still drive cars while being aware of their harmful effects points to subconscious reasoning within a kind of "local loop". It's hard to break this loop without first acknowledging its “locality”, and then getting used to a much wider "global loop".)

[00105] Existing semantic and “case-based” networks can be converted into "global" causal networks, which can then be used to model various "local loop" effects of particular mindsets and worldviews. All words and theses must be first converted into 2 x 4 and 3 x 4 wheels, like in FIGs 1 – 4, then into larger wheels, like in FIGs 5 and 6, and then into multidimensional networks, like in FIG. 7. The quality of such networks depends on semantic / ontological and dialectical / complementarity algorithms that can be constantly improved.

[00106] **Circumplex Models.** In psychology, more detailed wheels can be obtained from already existing circumplex models (Plutchik, Conte, 1997). FIG. 8 (A) shows the Plutchik’s wheel of emotions, perhaps the most elaborated circumplex model published. Scheme B shows its corrected form that corresponds to all requirements of the valid dialectic wheel. The Plutchik’s wheel was inverted inside out, so that the most subtle forms occurred in the center (where they can unite). Then some words were corrected to obey the dialectic laws (*e.g.*, in petal 4, Loathing was removed, but Restrain added, as it is more complimentary to Admiration from petal 8, than Boredom).

[00107] FIG 9 further expands the corrected Plutchik's wheel, furnishing it with additional segments (petals) and layers. Such wheels yield more accurate wisdom statements compared to what was suggested in Tables 2 and 3, as each position provides more thoroughly selected theses. For example, the 16 x 4 wheel in FIG. 9 suggests: "Serenity (1a) without Pensiveness (8b) yields Euphoria (1c)". (Here $(X+n) \pmod{4} = (X+4n) \pmod{16}$, $a = (a, b)$, $b = (c, d)$).

[00108] In addition, new types of moral maxims can be obtained: $X_{a,b}$ converts $(X+8) c$ to $(X+8)b$. "Joy (1b) converts Sadness (8c) to Pensiveness (8b)". $X_{a,b}$ with $(X+4) a,b$ and $X (+12) a,b$ convert $(X+8)y$ to $(X+8)b$. "Joy (1b) with Firmness (5b) and Carefulness (9b) convert Grief (8d) to Pensiveness (8b)".

[00109] Personality Traits. FIG. 10 expands the classic four temperament scheme to a 4 x 12 wheel, that unifies several major personality models (Big 5, Hexaco, MBTI, RHETI, Parent – Adult – Child, Rudolph Multiple Natures). It yields the following types of maxims: "Caring without Toughness yields Permissiveness. Toughness without Caring yields Bossiness.". A given character trait can be improved by improving its opposition: warriors must practice creative arts, whereas artists must practice warriorship.

[00110] Note, that character traits change in the opposite direction from classic elements. Caring comes from Inspiration rather than Profundity, although Feeling (analog of Caring) comes from Reflection (analog of Profundity) rather than Action (analog of Inspiration). This may be due to a mismatch between logic and intuition (left and right hemisphere). Synchronizing both brings us closer to the center (the "global loop" effect), while distortion pushes us to the edge (the "local loop" effects).

[00111] Personality Identification FIG. 11 shows a 24 x 10 wheel of affective words, where each word is related to a certain character trait from the Meyers-Briggs Type Indicator (MBTI). These traits have strict positions in FIGs 10 and 12, and they form specific personality types (denoted by the four-letter combinations) in FIG 12. Thus, knowing the words or theses that the person uses allows us to identify his character traits and personality types.

[00112] For example, follow the person's speech, or ask him to select the most typical moods and feelings from FIG. 11 (using either random cards or systematic scanning means). Determine his personality type(s) using distributions of his choices in FIG. 12. This method

does not require answering tedious (often ambiguous) questions, and therefore has advantages over typical ‘personality inventories’.

[00113] Knowledge Systemization. The more detailed wheels (like in FIGs 7 - 11) can be used for systemizing any knowledge (pertaining to our personal development), including any textual, audio and visual materials (quotes, sayings, advice, stories, anecdotes, narratives, books, clips, movies, music, photos, drawings, avatars, etc.). Any such materials can be tagged on the specific cell(s) of dialectic wheel(s) that model our inner world, just like we tag interesting places on digital maps of geographic landscapes.

[00114] Another way of knowledge systemization is through plotting it on the “most orthogonal” axes as described in the Designing Concept Mapping Axes. Each scale can be expanded through employing semantic differentials. The more detailed wheels provide the higher semantic specificity.

[00115] Analytical Psychology. Dialectic wheels help determining one’s inner states and the ways toward their improvement. Am I in a perpetual Love or just short-lasting Passion? Am I objective or subjective? These types of questions can be answered, using considerations from chapters Usability Test (moral maxims from Table 2), Mixed Wheels (Table 4), Solving Dilemmas (Table 7).

[00116] Balancing the inner states comes from consideration of segments rotated by every 90 degrees. For example, in FIG. 9, improving segment 13 (transforming Sadness to Pensiveness) requires considering segments 13, 1 and 5 (transforming apprehension to carefulness, euphoria to joy, annoyance to firmness)

[00117] Multidimensional causal networks allow modelling various misconceptions *via* the “local loop” effects (like in FIG. 7 (A)). The concept of "dialectical complementarity", along with "dialectical twins" and "dialectical cousins", helps distinguishing between truth and falsehood. No matter how sophisticated lies we encounter, certain combinations of different complementarities can point us to the truth.

[00118] Personality Identification (FIG. 12) helps predicting one’s behavior in non-trivial situations. When combined with “multi-level” complementarities, one can suggest the best activities for any given person.

[00119] Analytical Philosophy. Dialectic wheels uncover hidden relations between the seemingly unrelated concepts (*e.g.*, Truth and Beauty), as considered in the Usability Test,

Mixed Wheels, Unmasking Linear Logic, Interpreting Neutral Words, Humanistic Therapy, Solving Dilemmas, Educative Negotiations, Interpreting Abstract Theses, Designing New Scales, Re-interpreting the World, More Detailed Wheels and [Multidimensional Networks](#).

[\[00120\]](#) [Multidimensional causal networks, along with “multi-level complementarity” logics, help spotting misconceptions and straighten thinking process. Any two opposing views can start complementing each other, once they find their places in the global causality network\(s\).](#)

[00121] Computational Ethics. Any computer-generated statement or thesis can be converted to a dialectical wheel that verifies its ethical validity. Valid statements produce wheels that pass the 5th element test. This means that all positive theses (1a – 4a) must be complementary to each other. Usually at least one pair of negative theses (1b – 4b or 1c – 4c) is incompatible (not complementary and not similar) to each other.

[\[00122\]](#) [All computer-generated statements \(along with statements from Case-Based Reasoning\) can be converted into larger causal networks for checking their overall consistence and logical reasoning gaps](#)

[00123] Process Automation. To automate the process, every word and thesis should be linked to antitheses, negative, positive, and complimentary theses, as well as causal precursors and consequences ([see Table 1](#))

[00124] When constructing a new wheel, similar words should be placed in the same cell (or in adjacent cells, if the wheel has more than 4 segments). Opposite words should be placed in the opposite segments and layers (one closer to the center, another further away). Words that are neither similar nor opposite should be placed in (closer to) the orthogonal segments.

[00125] Higher reliability can be achieved using words’ “under-developed” and “over-developed” forms. The Under-development of Xa represents its opposition or antonym ($(X+2) b$). The Over-development of Xa represents its “negative side” or “harsh extremity” (Xb). Table 13 provides examples.

Table 13. Under- and Over-developments

	(1a) Love	(3a) Wisdom	(2a) Devotion	(4a) Peace
Over-developed	(1b) Fixation Promiscuity Insanity	(3b) Self-right Dogmatism Overthinking	(2b) Attachment Dependence Fighting	(4b) Indifferent Inaction Reluctance
Under-developed	(3b) Resentment, Hate, Fear	(1b) Ignorance Reluctance Insanity	(4b) Indifference Carelessness Egoism	(2b) War, Hostility, Fighting Abuse

[00126] Two words are similar (*i.e.*, may belong to the same Xa), if their over / under forms are also similar. (The latter should be determined by the number of synonymity / anonymity steps in semantic graph(s).) Two words are complimentary (may belong to Xa and $(X\pm 2) a$), if under-development of one is over-development of another, and *vice versa*. Two words are neutral or dissimilar (may belong to Xa and $(X\pm 1) a$), if at least one of their over- / under- forms do not correlate with any such forms of another word.

[00127] Both under- and over-developments can generally have multiple levels, *e.g.*, Love – Passion – Attachment – Control – Jealousy – Obsession – Insanity (see Roget’s Thesaurus and Semantic Differentials). They are useful for generating more detailed maps (like in FIGs 9 – 11).

[00128] Small wheels should be gradually merged into larger networks using predefined causal sequences that reflect natural phenomena, as in FIGs 5 – 11. These sequences should be rechecked and updated when larger wheels / networks are merged, as in FIGs 7(B) and 10.

[00129] Advantages of the present invention:

[00130] Obtaining dialectic wheel(s) from any given word or thesis, whereby the most subtle / positive concepts occur closest to each other (in the centre of the wheel or square), and all concepts obey the circular causation

[00131] Using internal consistency criteria based on complementarity, oppositions, and causality, as exemplified in Table 1

[00132] The 5th element test, according to which valid wheels are such that all positive theses are complimentary to each other and can be experienced simultaneously and perpetually without any special effort. Accordingly, the morally correct judgements and

decisions must involve the principle of complementarity, arising from two or more positive words or theses that in combination create something new. The latter must be perpetually stable and simultaneously reflect positive sides of all original theses.

[00133] Generation of wise sayings using rules from Tables 2 and 3, and their proper modifications, if cell numbering differs from FIG. 1(F) (*e.g.*, like in FIGs 1(G) or 3 – 11)

[00134] Enhancing the Case-Based Reasoning through better interpretations (Table 9)

[00135] Designing concept mapping axes, through expanding any given thesis to the N-dimensional space (like in Table 10, where N = 4)

[00136] Constructing larger wheels, where all segments are orthogonal to each other, and circular causation reflects self-regulating natural transformations.

[00137] Designing causal networks, where nodes (words or theses) are linked to their positive and negative forms or consequences. Each node should also be provided with semantic / ontological distance(s) from the symmetry centre of all complimentary oppositions (“subtlety indices”)

[00138] Mapping, tagging, or positioning any concepts or information on the dialectic wheel or causal network

[00139] The particular design of dialectic wheels pertaining to emotions and character traits in FIGs 9 - 11

[00140] Determining personality types from the person’s own words (FIG. 12) and/or mood or character selection (FIG. 11)

CLAIMS

What is claimed is:

1. A method of obtaining one or more dialectic wheels from a word or thesis, comprising:
 - determining an opposition of the word;
 - generating negative sides of the word;
 - generating positive sides of the word;
 - generating negative sides of the opposition word;
 - generating positive sides of the opposition word;
 - constructing a circular causation of the generated positive and negative sides;
 - obtaining a dialectic wheel; and

- obtaining another dialectic wheel by switching positions of the negative sides;
2. A method of obtaining causal networks through merging smaller dialectic wheels, so that all segments are orthogonal to each other and all theses form meaningful circular causations that ensure natural self-regulation
 3. The method of claim 1, further comprising the step of using a causal graph for constructing simpler dialectic wheels.
 4. A method of modelling logical reasoning in various theories, worldviews, ideologies and doctrines, using multidimensional causal networks
 5. A method for identifying character traits and personality types, based on the words and theses used by a person, and their position(s) on FIGs 9-11.

ABSTRACT

This invention represents a method for visualizing dialectic and causal relations and decision-making in analytical psychology, philosophy, and computational ethics. It uncovers the deeper meaning of any words or theses, helps generating wise sayings and hypotheses, verify the validity of any judgements (goals, decisions), balance opinions, change attitudes, and more. It is based on the analysis of positive and negative sides of thesis and antithesis, suggesting how all positive sides could work together, while negative avoided. It can be viewed as an “Artificial Honesty” that unites ancient philosophies with modern formalism.

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