

Physics of Yin-Yang & Five Element and its General Application to Constitution & Psychology

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The paper is concerned about the discovery of new physics of the old oriental philosophy of the Yin-Yang & Five Elements. The physical properties of Five Elements are defined, similarly as in thermodynamics, as five different characteristic state in a cyclic system of nature or a human body. Wood is defined as " warm and soft ", Fire as " hot and dispersive ", Earth as " agglomerating and sticky ", Metal as " tensile and crystallizing ", and Water as " cool and slippery " state, respectively. Based on the physics of Five Elements and Qi channel theory, five different constitution classifications are made according to the shape of human face, such as long, inverse triangle, circle, square, and triangle geometry, respectively.

Since the constitution implies the relative size or strength of 5 major organs, this theory can be applied successfully to the prediction of the susceptibility to specific diseases as well as the analyses of personal character such as emotion and sensibility. The specific character is analyzed with four different aspects; that is, the first and second are caused by the positive and negative side of the strongest organ, the third character by determined the weakest organ, and finally the fourth by the abnormal psychology due to serious illness.

1. INTRODUCTION

This paper is trying to make a new physical interpretation of one of the oriental philosophy, say, the Yin-Yang and Five Element Theory as well as its application to the analyses of human character. The definition of Five Element properties in this study are made based on the five-step concept of cyclic process occurring in the nature and in a human body. A similar scientific definition may be found in thermodynamics, in which they define various thermodynamic properties, such as enthalpy, pressure and etc, in a system of equilibrium state. The general explanation of the physical concept of this oriental philosophy were presented elsewhere and will not be repeated here in detail (Jang, 1998a, 1998b, 1998c, 1999a).

The Five Element theory relates all things in nature

such as energy, substance, and time of day and year to one of the Five Elements: Wood, Fire, Earth, Metal and Water as shown in Table 1. In Table 1, the physical properties of Five Element are defined as warm and soft energy state for Wood, hot and dispersive for Fire, agglomerating and sticky for Earth, tensile and crystallizing for Metal, and cool and slippery for Water. These basic properties should be noted in that these can be generally applied to the constitution classification, analysis of personal character, diagnosis of blood pulse palpation, explanation of unhealthy physiological symptoms, and even the quality of feeling of various meat, etc.

Even if these basic properties of Five Elements are defined phenomenally, using convenient scientific concept of heat and fluid flow, it is believed that the true properties have more profound meaning than defined here. In fact, oriental medicine also

identifies every part of the body with one of the Five Elements. For example, each Element relates to a specific Yin/Yang pair of the channel – organ system (COS) and various body parts of correspondence. Thus Wood relates to the COSs of liver and gall, and their correspondence of body parts such as eye, neck, muscle, tonsils, etc. as shown in Table 1. Further, the function of body parts and COS are also closely

related and they work in a holistic way. To be specific, the malfunction of any major organs deteriorates any corresponding body parts governed by the organs and vice versa. Also, the nourishment of any major organs by color, taste, aroma, and even mental therapy also enhances the function of various body parts controlled by that organ as well as the organ itself.

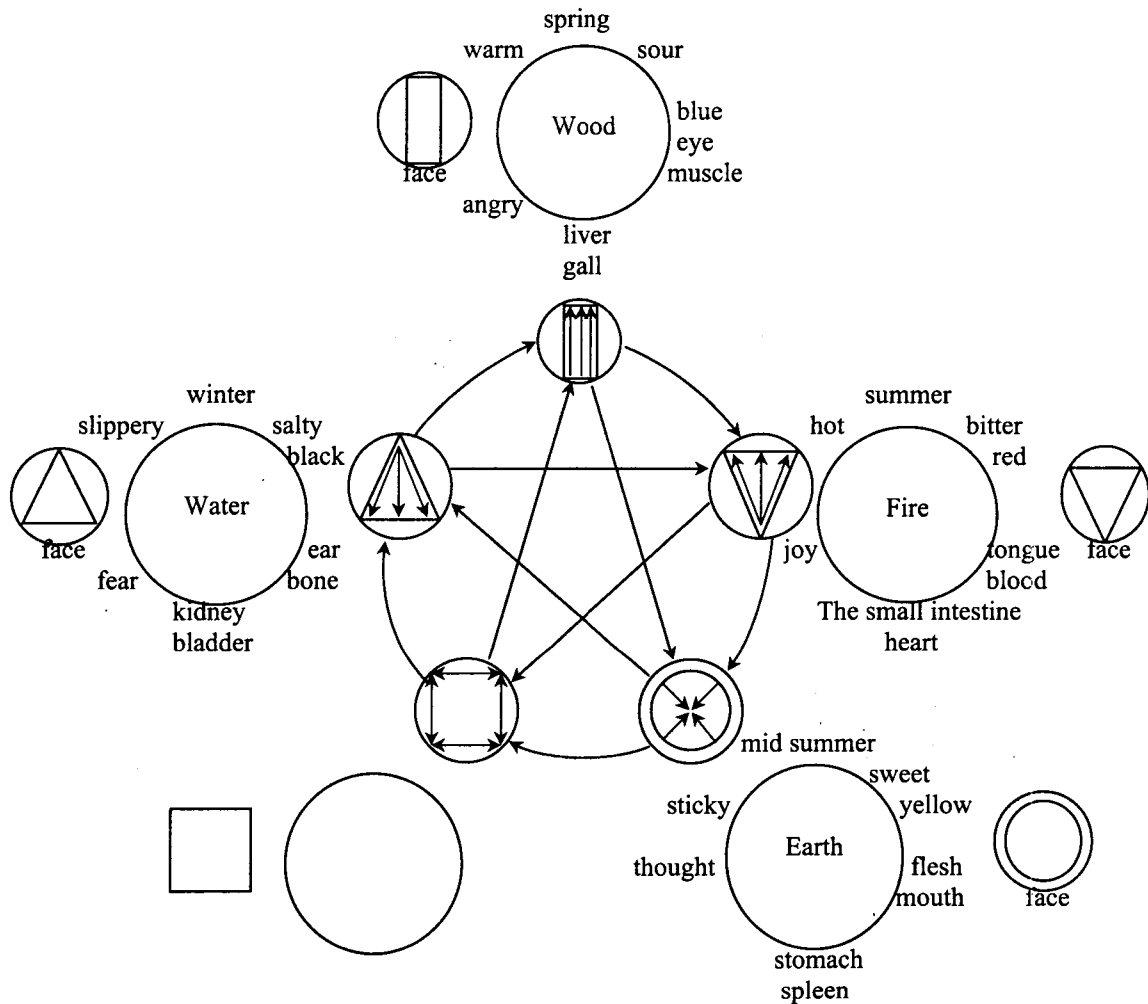
Table 1. Five Element association

Element	Wood	Fire	Earth	Metal	Water
Physical Property	Warm & Soft	Hot & Dispersive	Agglomerating & Sticky	Tensile & Crystallizing	Cool & Slippery
Yin Organs	Liver	Heart	Spleen	Lung	Kidney
Yang Bowels	Gall	Small intestine	Stomach	Large intestine	Bladder
Five Taste	Sour	Bitter	Sweet	Hot	Salty
Color	Blue	Red	Yellow	White	Black
Day	Dawn	Morning	Noon	Afternoon	Evening
Cereals	Red bean	Sorghum	Millet	Brown rice	Black bean
Season	Spring	Summer	Late summer	Fall	Winter
Body Part	Eye	Tongue	Mouth	Nose	Ear
Emotion	Anger	Joy, Love	Thoughtful	Grief	Fear
Five Virtue	Benignancy	Politeness	Faith	Obligation	Wisdom
Unhealthy Physiological Symptoms	Sigh, Tears	Hiccup, Sweat	Belch, Oily face, Inviscid Spit	Sneeze, Snivel	Yawn, Sticky Spit
Domestic Animal	Dog	Goat	Cow	Horse	Pig
Parts of Human Body	Neck, Hip joint, Foot, Tonsils, Muscle, Nail, Toenail	Elbow Joint, Face Flesh, Upper Arm, Blood, Blood Vessel, Spade Bone	Fat, Belly, Knee Joint, Upper Leg, Lips, Breast	Skin, Body Hair, Anus, Wrist Joint	Bone, Bone Marrow, Tendon, Waist, Teeth, Hair, Ankle
Unhealthy Face Color In Disease	Blue on Nose	Red around cheekbone	Yellow on entire face	Pale or White	Black
Climate Characteristics	Windy	Hot	Humid	Dry	Cold
Sensing Ability of Body	Color	Feeling	Taste	Odor	Voice
Mental Ability	Planning	Memory	Imagination	Organization	Development
Direction	East	South	Center	West	North

There are two basic cycles that illustrate the interaction between these elements as shown in Fig 1. In the first cycle, known as the Cycle of Generation, each element generates or produces the succeeding element. This is sometimes known as the Mother-Son law. One element gives birth to the next and nourishes it by a flow of energy.

In the second cycle, known as the Cycle of Control or Destruction, each element attacks or controls the one after the succeeding element. It is really a control cycle in that it represents the process by which the elements check and balance one another. If the strength of each element is equally fair, it is expected that they will simply follow the cycle of mutual life, that is, the Cycle of Generation.

Fig1. The Association of Five Elements & their mutual relationships of qi energy flow



Wood nourishes Fire
 Fire nourishes Earth
 Earth nourishes Water
 Water nourishes Wood

Wood destroys Earth
 Earth destroys Water
 Water destroys Fire
 Fire destroys Metal
 Metal destroys Wood

However, if one element becomes too strong or too weak, it can attack another or be injured. Thus, the strong Wood can injure Earth (roots of earth will become deteriorated). Earth controls Water via dams. For metaphysical example, the sticky property of Earth obstructs the flowing of Water properly. Water injures Fire by extinguishing it out. Fire destroys Metal (Metal can be melted by strong Fire). The strong, dispersive force or energy by Fire disturbs the force of tense, fixed tendency of Metal. Metal destroys Wood as an axe cuts a tree, and the mutual destruction cycle begins again. These two cycles of Generation and Destruction together with the basic properties of Five Elements form the fundamental theory or model in this paper

2. Application of Five Element theory

2.1 Diet therapy by taste in Five Element Theory

One of the key theory of oriental medicine is that each taste of Five Elements nourishes the corresponding organ. For instance, if you take sour tasting food, your organs of Wood such as liver and gall will be nourished. Similarly, bitter taste goes to the organ of Fire such as heart and the small intestine. The sweet taste does the organ of Earth such as spleen and stomach. The hot taste does the Metal organ such as lung and large intestine. Finally, the salty taste nourishes the Water organ such as kidney and bladder. The importance of the taste, as mentioned in Neijing, on the corresponding organ is so powerful that it overwhelms, in most cases the effect of the other properties food and herb such as the nutrition, color, or shape, etc. These days, the allopathic curing effect and properties of the chemically prepared western medicine are so rapid and strong that most people do not recognize the importance of the power of taste itself. This may be one of tragedy mankind faces these days.

Why do we need to reflect on the aspect of taste in eating something? First, the "Theory of Qi & Taste" is one of basic principles of oriental medicine as declared in Neijing. Second, we obtain most energy for life from food, and taste and flavor are critically important factors of food intake criteria. Let me give an easy example to support this

penetrate the soil or if the root absorbs too much of nutrients from the earth, the quality

argument. If we consider what kind of ability God gives to the baby or ancestor of mankind for health of their survival, who does not have any nutritional knowledge, it must be the ability to select an adequate food by taste and flavor. Third, the concentration of qi energy is probably high and condensed in food, rather in the other things of less material such as sound, color, flavor and mental aspect, etc.

Now let us consider some application examples of taste therapy. If you take too much amount of food of sour taste, which is more than you need, the excess part of Wood energy will flow to attack the Earth organ. Thus you will feel shortly the pain of stomach after having excessive food and drugs such as barley, red bean, wheat, vitamin C and aspirin. The well-known example of this is the stomach ulcer caused by the aspirin of sour taste. You may easily understand that this happening follows exactly the route of the second mutual destruction cycle.

Similarly, if you try too much food of sweet taste, the extra energy of Earth will go to attack the organ Water such as kidney and bladder. Thus, you will have the trouble in the part of body controlled by the organ of kidney and bladder. For example, you will feel more frequently the desire of passing urine or pain of the ear, etc. If you have too much food of salty taste, like table salt or black bean, the excessive energy of Water flows into the realm of Fire, which attacks the organ of heart and the small intestine. Thus you will feel the heart pain, hypertension and sweating especially on the face, etc.

Excessive diet of bitter-tasting food give rise to the trouble of the lung and the large intestine, for instance, bleeding from anus, diarrhea, and skin disease. Believe or not most of the adverse side effect of antibiotic medicine on lung and the large intestine is caused by the function of medicine with bitter taste. You may find the evidence of this argument in that Korean people who enjoy hot dishes like Kimchi (Korean hot salad) show low susceptibility of diseases of lung and the large intestine, while American people who enjoy bitter tasting-foods like coffee, liquor, chocolate, salty, grape fruit without eating

hot stuff is quite vulnerable to diseases related to Metal organs. Similar arguments can be also made for other organs. You may find the more detailed specific body symptoms which caused by dieting of excessive food of each element (Kim, 1998; Jang, 1999b).

Scientific evidence of mutual destruction of five elements can be found easily in open literature of various areas of interest. In this paper, two well-known examples are cited in the area of toxicology and food science, particularly dealing with the importance of taste of food. In the area of food science, it is known that the addition of salt as flavoring agents enhances flavor by suppressing bitterness than sweetness (Breslin and Beauchamp, 1997). In more details, when salt (sodium acetate, Water) was added into the mixture of aqueous solutions of a bitter substance (Fire, urea) and sweet one (sucrose, Earth, an artificial sweetener), statistical analysis revealed that the intensity of bitterness greatly decreased, whereas the

sweetness intensity increased levels that approximated the sweetness of sucrose alone in pure water. They did not give any proper explanation of the mechanism why salt suppresses the taste of bitterness, etc.

But Five Element theory can easily explain this phenomena in that Water destroys Fire and Earth also destroys Water. Thus the taste of bitterness decreased, while the taste of sweetness is not influenced to the extent of bitter one. The other example may be found in the risk assessment area of artificial sweetener in toxicology. In June 1969, Abbott laboratories reported that bladder cancer had occurred in animals exposed for long periods of time to Sucaryl (10:1 cyclamate to saccharin). At about the same time, studies by an FDA scientist, indicating that cyclamates produced birth defects when injected into chicken eggs (Kamrin, 1988). A couple of these illustrations by example clearly show that the sweet taste of Earth attacks the organ of Water.

Table 2. Symptoms of body related to major organ diseases (Kim, 1998)

Five Element	Major organ	Body symptoms related to this organ	Food taste to take For this symptom
Wood	Liver Gall	Liver cancer, hepatitis A, hepatitis C, gall stone, pleurisy, migraine, the fur, pricking eye and tearing, bitter tasting, becoming hoarse, tonsillitis, phlegm, muscular pain, muscular rigidity, cramp, fingernail & toenail disease, rupture, gnashing & talking in sleep, squint, hard & lumpy skin	Take sour taste
			Not to take hot taste
Fire	Heart Small Intestine	Heart pain, panting & thirsting, swelling face & great sweating, pimple, hypertension by heart, elbow joint pain, shoulder blade pain, upper arm pain, sciatica, tongue disease, dysphemia (stammering), melaena (blood discharge from the bowel), menstrual pain, habitual abortion, hiccup, accompaniment of vital energy disease	Take bitter taste
			Not to take salty taste
Earth	Spleen Stomach	Ulcer of the stomach, cancer of stomach, excess acid in the stomach, gastric ptosis, ache of the forehead, anything unusual in lips and mouth, oral bad odor, ache of lower teeth, ache of knee, grease on one's face, unusual improvement of appetite, no tasters, obesity, likeness of taking bed, belch, facial paralysis	Take sweet taste
			Not to take sour taste
Metal	Lung Large Intestine	Pneumonia, cancer of lung, ache of large intestine, cancer of large intestine, typhilitis, cancer of rectum, piles, anal fistular, blood from nose, snivel, splentis, ozena, sneeze, cough, asthma, joint disease of wrist, ache of upper teeth, skin disease, diarrhea	Take sweet taste
			Not to take bitter taste

Water	Kidney Bladder	Tympanitis, osphyalgia, cystitis, occiput ache, a renal calculus, frequency of urine, an eyeball ache like protruding, ear singularity, the ache of calf, articular neuralgia of ankle, a renal hypertension, the marrow of bone, osteomyelitis, lack of appetite, repeated yawn	Take hot taste
			Not to take sweet taste

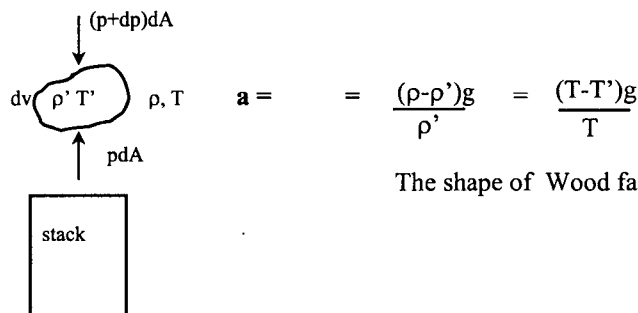
2.2 Constitution classification by the shape of face and personal character

In this section, constitution classification together with the description of personal character will be discussed briefly based on the properties of Five Element as in Table 1. The constitution classification is made based on the shape of the face according to the interpretation of properties of Five Elements. The reason why we determine the constitution classification only with the shape of face may be explained by the fact that all positive qi channels go through the face and thereby the proportion of each Element can be more vividly visualized in the form of matter on the face other than any part of human body. Thus the different proportion of qi energy of a person will come up with different shape of

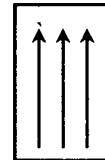
face(Jang,1998a,1999).

Wood face : The inherent property of Wood stands for the warm energy state and the warm fluid with reduced density will have the force of upward buoyancy as shown in the figure below.

Therefore the person who has a large proportion of qi energy of Wood in a body will have the long face. Since the Wood energy is known to be generated from the liver and gall, the person who has the long face, that is, a large aspect ratio, will have the large size of liver and gall. We may further imagine that the long face person will have the personal character of Wood property, say kind, tender, and progressive tendency.



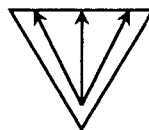
The shape of Wood face :



Fire face : Since we define the intrinsic property of Fire as explosively dispersive energy state, we can imagine the shape of Fire face will be the geometry of the inverse triangle. Thus the person who has the large

'heart and the small intestine' will have the face shape like the triangle upside down. The personal character of this kind of person usually shows as artistic, passionate, and aggressive but no persistent for a long time.

The shape of Fire face :

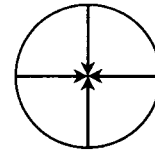
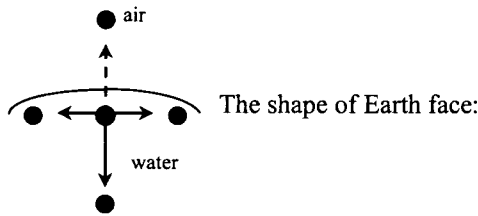


Earth face : The force or energy of Earth comes from the organ of spleen and stomach and the basic properties of this element is assumed to be the state of binding or cohesive each other. In this case the shape of geometry

should be spherical form, that is, the minimal surface area to the volume occupied due to the radially converging tendency to the center of the sphere, as shown in the following figure. Thus, we can deduce that the person

with this kind of spherical shape of face will have the personality of self-centeredness

which does not care to the eye of the other persons around him.



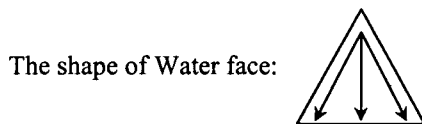
Metal face : The tensile or crystallizing force or energy of Metal comes from the organ of 'lung and the large intestine'. Thus,

the person who has the large 'lung and large intestine' will have the face of square shape. The person of this shape has the character of routine, making a rule, willing to win, and authoritative tendency.



Water face : The energy of Water is known to come from the organ of kidney and bladder in a human body. Since the properties of Water are assumed cool and slippery, the person with large organ of Water element will have the face of triangular shape as shown in the following figure. This face can be imagined from the downward flow of cold water due to negative buoyancy.

The person who has this kind of shape will show the personal character of amiable, slippery, not straightforward, patient and hiding tendency. In order to understand this personal character, just remember the definition of fluid as the substance of continuous deformation as long as the existence of shear stress applied.



2.2 Detailed analysis of personal character

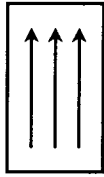
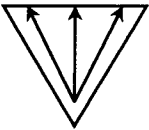
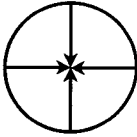
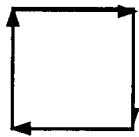
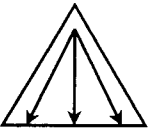





Based on the classification given above, a more detailed analysis about the personal character will be presented. As mentioned already, the character of a person can be analyzed with four different aspects according to the relative strength of major organs. The first and second personal characters are attributed due to the physical characteristics of the strongest organ among her or his 10 organs. Especially the first one describes the positive and healthy character, while the second part does the negative mental symptoms caused by the unhealthy physical condition. For example, one person who has a strong liver or gall bladder shows kind and warm personality when he is in good shape but for the opposite case, he gets angry easily and

changes his decision often times. Emphasis should be given in that this kind of explanation is drawn not only by the large statistical observations, but also based on the definition of the theoretical concept of " warm and soft " state of Wood. The third character of a person comes from the relatively weak organs. For example, if one person has a strong organ of Wood, then he will have relatively weak function of Earth and Metal organs, since these two elements are in the opposite state of the mutual destruction of the Wood element. Thus he will have the small spleen and stomach corresponding to the earth as well as the weak lung and the large intestine. This implies that he will show the weak characteristics corresponding to these organs. The weak stomach will result in weak self-centeredness, while the small power of lung show the loss of winning tendency, etc. The

final, fourth character is caused by the significant loss of any organ power due to the severe disease, irrespective of the constitution. However, the abnormal sickness of character

will become worse when the large capacity of the specific organ loses its power more. The details are summarized in Table 3.

Table 3. Five constitution classification and their characteristics

1	Five Element Constitution	Wood	Fire	Earth	Metal	Water
2	Properties	Warm & Soft	Hot & Dispersive	Agglomerating and Sticky	Tensile or Crystallizing	Cool & Slippery
3	Shape of Face					
4	A well-known public figure	Prince Charles Kim, Yong-Sam Tiger Woods Vladimir Putin	Steve Macquine Hillary Clinton Al Pachino Gregory Pack	Kim ku Chun Duwhan Mihail Gorbachov	Bruce Willis 江澤民 Rho, Tae-Woo Princess Diana John Wayne 森喜朗 (모리 요시로)	鄧召平 (Deng Xiaoping)
5	Picture (example)					
6	The strongest organ*	Liver(-) Gall(+)	Heart(-) the small intestine	Spleen(-) Stomach(+)	Lung(-) the large Intestine (+)	Kidney(-) Bladder(+)
7	Positive Character by the strongest organ	Kind Tender Progressive Good planning	Artistic Passionate Brave Sacrificing Good sixth sense	self-centeredness Never disgusting Certain	Strong desire of Winning Showing example, Routine Authoritive, Obligative,	Easily Compromising Amiable, Slippery, Patient, Hiding
8	Negative Character by the strongest organ	Piercing by abusive words Easily chnaging the decision Violent, Capricious	Hot tempered, Easily fighting, No persistent Rude & No etiquette Too luxurious False showing	No sense Too jealous Not realistic Day-dreaming Idle	Pessimistic Easily despairing Excessive missing Too authoritative	Used to Opposing, Coward, Making often excuse
9	Strong boby Part of This Constitution or body parts controlled by the organs above	Eye, neck, Hip joint,foot, tonsils, uscle, nail, toenail	Elbow joint, face, Upper arm, Tongue, blood, Blood vessel, Spade bone	fat, belly, knee joint, breast, upper leg, mouth, lips	Skin, nose, Body hair, The anus, the wrist	Bone, Bone marrow, tendon,waist, ear, teeth, hair, ankle

10	Weak Organs	Earth (Stomach and Spleen) and Metal(Lung and Large Intestine)	Metal(Lung and Large Intestine) And Water(Kidney and Bladder)	Water(Kidney and Bladder) And Wood(Liver and Gall)	Wood(Liver and Gall) And Fire (Heart and small Intestine)	Fire (Heart and small Intestine) And Earth(Stomach and Spleen)
11	Character appeared by weak organs	No self-centeredness No routine	No Routine No endurance	No endurance No warm & kind	No warm & kind No passion	No passion No self-centeredness
12	Weak Body Parts of this Constitution	Earth and Metal body parts	Metal and Water body parts	Water and Wood body parts	Wood and Fire body parts	Fire and Earth body parts
13	Taste Preference of this constitution	Sweet and Hot	Hot and Salty	Salty and Sour	Sour and Bitter	Bitter and sweet
14	Dislike Taste of this constitution	Sour	Bitter	Sweet	Hot, Spicy	Salty
15	Abnormal psychology	Severe violence in home	Severe love sickness	An idle fancy, A day dream	suicide	Horror scare

* - organ, + empty viscera

3. Conclusion

Based on the new interpretation of the Yin & Yang and Five Element theory, constitution classification is made with the shape of face. The basic properties of Five Elements are defined using the physics of the thermal & fluid concept. By doing this, the relative strength or size of each organ in a human body can be determined qualitatively, simply by the geometrical shape of each face. This information can be greatly helpful in advising the diet of health and disease treatment, even more, together with the analysis of personal character. The personality is analyzed with four different aspects according to the strength or condition of the major organs.

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