Determining Interest Through Natural Language Interpretation,

Machine Semantic Understanding And Evaluation of Formative and Normative Interest Using HAYAWIC Form Unilogic

Abstract

This paper presents a new way of conceptually organizing speech patterns in a way designed to make machine semantic understanding easier. This approach at designing a method for natural language processing uses the philosophical concept of HAYAWI. HAYAWIC logic is an attempt at defining an underlying logic which explores the relationships between all things, whether they are real or imaginary, and mental or physical. This concept is explored in depth, and a system of notation is given to aid in the analysis of written material. Examples of documents analyzed according to HAYAWIC logic are then shown and conclusions drawn. A conclusion about the efficiency of this method is made, and ethical aspects of the use and construction of an intelligent machine are explored. From this exercise it seems like there is much work to be done in the area of HAYAWIC logic, and that it is certainly not a complete or robust logic system yet. If ever computers are made which are able to use this fuzzy concept for understanding the world, then their use will undergo quite an expansion. This expansion will have to be carefully controlled so humans may benefit from their intelligent machines, rather than be victimized by them.

Introduction

Since the 1960's people have been curious about giving a machine the ability to understand human thoughts, and interact with a human on a more equal basis. While the reality of the situation is that this is not now possible, there is a large volume of research which seems close to making the breakthrough. There is no specific field which consists of "research on how to make a human-like computer," so instead, efforts in this direction come from an amalgamation of several fields. These are the fields of epistemology, psychology, philosophy, linguistics, anthropology, management science, math and logic, and computer science. Some of these fields are quite quantitative, such as math, logic, or computer science, while others like psychology or management science are based on non-mathematically oriented qualitative study. In order to understand the basics of HAYAWIC logic and how it relates to the computer field it is first necessary to understand some related concepts and background ideas. It is also necessary to keep an open mind because this field is just being broken into and frequently ideas may seem counterintuitive or just wrong. There have been many iterations and attempts at defining the final theory, and it is important to understand that the dynamic formative stages of a qualitative theory result in following many less than optimal paths of thought for a short time. Hopefully with time these incorrect and fuzzy concepts will lead to more hardened testable ideas.

In the computer related fields, scientists and engineers have long been accustomed to strict mathematical or Boolean logical thought. In simple computers, this approach is fine, because these rules do indeed describe how computers operate on a basic level. When considering something as complicated as the human mind, however, study has always taken a more generalized, "softer" approach. This is because it was simply impossible to describe the functions of the mind with simple algebraic or Boolean equations. For a dramatic illustration, our minds cannot simply define an equation for love. When asked to describe it, we must resort to "fuzzy" descriptions which approximate a feeling we all share. Our minds are quite good at using "fuzzy" logic. If I were to drop a box of toothpicks on the ground and ask you about how many there were, you could probably answer with a close guess without counting a single toothpick. Computers, with their strict mathematical construction, find this sort of estimation as impossible as we find creating an equation for love. The question remains, therefore, how can we manipulate both of these styles of thought to meet in the middle and construct an interface both the computers and humans can cope with for equal communication? The answer is not here in this paper, but a start at this bridge between computers and humans is attempted.

In the field of Psychology, many physicians and theorists have come up with theories to attempt to explain peoples' behavior. One of the most prominent is Dr. Abraham Maslow's Hierarchy of Human Needs. He theorized that there is a naming hierarchy of needs for humans from the most basic needs, such as needs for food, shelter, and clothing, to the highest level need for meaning and fulfillment in one's life. His ladder of human needs spanned five levels from physiological, through safety, belongingness, esteem and finally metaneeds. See **Diagram One**. He believed that humans must first satisfy their need for a lower need before they could concentrate on a higher need. Physiological needs must be taken care of before safety needs, which then must be taken care of before belongingness needs. He believed that these needs were biologically built into all humans.

While his ideas are widely considered a good foundation for why a person could be expressing an interest in fulfilling any of the needs mentioned, it has been noted that people do not always attempt to fulfill the needs in the specific order he mentioned. For example, some people seem to have more interest in fulfilling esteem needs for dignity and recognition than they do for fulfilling belongingness needs for love, affection or family. This means that the interest expressed in fulfilling human needs is not a strict hierarchy at this level. Without a strict hierarchy, it is difficult to attempt to design a machine which could interpret human actions. Therefore, this problem needs to be examined in more depth, at a more basic level, but without forgetting that it is a "fuzzy" problem. While it is impossible to get a computer to understand a need for something so vague as affection, if these terms are further broken down, it may be possible to form a data structure capable of using such a construct. With a stretch of the imagination, then, Dr. Maslow could be considered one of the first to attempt to develop a data structure hierarchy to explain human thought patterns and needs.

In the field of computer science, there is a type of analysis done to aid a system designer in understanding a problem. This is known as Structured Analysis. In structured analysis, a problem is broken down into smaller components and the relationships between the components are examined. In particular there is one sub-field of computer science which is particularly applicable to this study. This is object-oriented modeling and design. In this system of structured analysis, the system designer examines real world entities and attempts to build virtual models or representations of these entities within the computer so that the computerized solution to a problem will more closely resemble likely solutions within the outside environment. The notation is called Object Model Notation, and it is based on two types of relationships. One relation is called the IS-A relationship and this is designed to draw a relationship between two entities where one is a more specific version or example of the other. For instance, if I have a ball, it may be understood that I am holding some sort of small spherical object. If I say I have a baseball, more information is conveyed. It can be gathered that I have a three-inch diameter hard leather sphere which is sewn together with thread over a stuffing of yarn. More information is conveyed here because a baseball IS-A specific version of a ball. In object model notation, an IS-A relationship is shown as a small triangle with the point facing towards the more general object, and the flat base facing the more specific object. In addition to IS-A relationships, Object Model notation specifies an aggregation relationship. An aggregation relationship exists where one object is built from other entities. For instance a car is an aggregation of many components. These are the engine, fuel-injectors, exhaust, frame, wheels, brakes, doors, etc. These components may be broken down further with other aggregation relationships because something like the engine is an aggregation of pistons, a crankshaft, heads, gaskets, camshafts, valves, and lifters, etc. In object model notation an aggregation object is represented by a small diamond. This appears between the composite object and the number of objects which compose it.

The importance of IS-A relationships and aggregation relationships to this study is that many of the entities in the world can be described or analyzed using these two types of relationship. In fact there is some evidence that understanding relationships like these form one of the basic processes underlying human understanding as well. As an example, **Diagram Two** illustrates Maslow's hierarchy again in Object Model notation.

This type of Structured analysis is a good and proven way to design systems. It is a very generalized model of the real world, and as long as this process is not applied to problems too large, it is not difficult to translate the system designs into a computer language and from there into the machine language making up the actual program. In a broad and general sense, then, this type of analysis is a way of organizing the world so that it can be understood well enough to be put into a computer. The computer chips used in every computer, however, only understand two things, On, and Off. They store bits of information with high and low voltage settings. Therefore this analysis is really a complicated but straight forward way of translating real world relationships between large and complex entities into the simple binary logic of On and Off that computers use.

To understand low level computer algorithms, we study Boolean algebra, which only deals with the simple on and off relationships that computers use. Many ideas that are expressed in Boolean algebra, can also be expressed in a different way using regular algebra. People have long realized that mathematics can be used to express a relationship between two ideas. Take, for example the Cartesian plane. See **Diagram Three**. This mathematical construct is designed to illustrate the relationship between two entities called functions. One of these entities is expressed in terms of X and the other in terms of Y. In a more general sense, the Cartesian plane illustrates relationships between an X entity and a Y entity where either entity can take on a positive or negative value. This means that in one quadrant of the Cartesian plane both entities are positive, while in the opposite corner both are negative. In each of the other corners one entity is positive, while the other is negative.

This generalized concept has application outside of the arena of mathematics. Relationships between any two entities that can take on both positive and negative values can be arranged on this plane and plotted out. It is even possible to do this with entities that are not easily quantified. Take for example, the theory of Conflict handling modes proposed by K.W.

Thomas. See **Diagram Four**. In his analysis, individuals took on two dimensions of strategy when attempting to handle a conflict. One of these was the arguing party's desire to satisfy their own concern, while the other was the Party's desire to Satisfy the Other's concern. A party strongly interested in satisfying their own concern was labeled assertive, while if they were less motivated to satisfy the concern they were labeled unassertive. Equally, a party strongly interested in satisfying the other's concern was labeled cooperative, while a party unmotivated to satisfy the other's concern was labeled uncooperative. These two dimensions of conflict strategy are both exhibited by each side of a conflict. The resultant interaction between the two dimensions strongly affects the perceived strategy of a party involved in the conflict. A party strongly interested in furthering their own goals can either be highly competitive, or collaborative if they allow themselves to work with the other side. A party so concerned about furthering their own agenda will appear as if they are accommodating to the other side, unless they are also unmotivated to let the other side prevail, and then they are simply attempting to avoid the conflict altogether.

From the fields of computer science, psychology, management, and logic and mathematics just explored in the previous paragraphs, a question remains. Is it possible to form a new type of logic by applying Structured design techniques to carefully analyze the environment down to its most basic level? Once this most basic level of understanding is reached, can it be coded into a computer in order to have a computer truly develop an understanding of the world around it and how entities are likely to interact and relate to each other? With a sound understanding of the external world and the relationships between entities that exist within it, could not a computer read and analyze a passage from any text and attempt to determine the user's underlying viewpoint or interest? This question addresses a field which shares a lot of common ground with the field of artificial intelligence. Some of the most forward looking work in artificial intelligence has been done by Dr. Ashwin Ram at the University of Georgia.

Dr. Ram has approached this problem without first developing a new logic system. His attempts have centered around the development of a computer which uses goal driven learning and what he calls the theory of question asking. To test his work, the computer is designed to examine textual material. Reading and understanding real texts requires a large range of tasks, including sentence processing, story structure understanding, episodic understanding, explanation, memory, interest management, learning, etc. The work centers around development of a functional theory of reading which models the complete set of tasks which a reader must perform during the comprehension process. The various tasks maintain a close interaction, exchanging information as needed. This integrated approach lessens the burden on any one task. The goal is that this will lead to a kind of reading called creative reading, in which the reader must learn enough about a novel situation, in a short text, in order to accept it as the background for the story, and simultaneously must understand the story itself (for example, consider reading a science fiction story). Implemented systems include AQUA, a system that learns about terrorism by reading newspaper stories about unusual terrorist incidents; and ISAAC, a system that reads short science fiction stories. As stated however, the computer must use goal driven learning to develop a true understanding of the situation. The central idea underlying goal-driven learning is that because the value of learning depends on how well the learning contributes to achieving the learner's goals, the learning process should be guided by reasoning about the information that is needed to serve those goals. The effectiveness of goal-driven learning depends on being able to make good decisions about when and what to learn, on selecting appropriate strategies for achieving the desired learning, and on guiding the application of the chosen strategies.

In practice, these applications and theories have fallen somewhat short of expectations. Dr. Raiek Alnakari's work in this field begins on a much more basic level, with an epistemological theory which addresses a new type of logic. This logic is called HAYAWIC logic. HAYAWIC is an Arabic word which comes from two roots which mean dynamic and container. HAYAWIC Logic is the view that all entities in the universe, living or not, existing or not, spiritual or physical, are Forms which change from one state to another within the cycles of which they are a part. For Instance, a tree may be growing in the forest, and be cut down and used to make paper. The paper is the same entity as the tree, only in a different form. Finally, the paper may be thrown out, and buried, only to become the soil from which another tree grows. This entity is once again in a tree form within the life cycle. Entities are related to one another through cycles, and HAYAWIC logic represents the relationships as dynamic forms which contain an inherent but changeable interest relationship to other forms. Any entity contains representations of each of the HAYAWIC roots, just as any physical object can be used to demonstrate the laws of physics are at work in it.

This application of HAYAWIC logic is to understand the root interest contained in speech no matter which language is being spoken so that all humans will be able to better understand the underlying nuances expressed in the speech patterns of different cultures. It is purposely generalized at this stage of development so that future refinements will not be contradictory with earlier work, but will add to this work by specificity. HAYAWIC Logic applies to speech patterns because they are a form. We can study and classify a form by examining its most basic attributes. All communication exists to transfer one individual's ideas to another. When an individual communicates, they have a reason for doing so, and this is their "interest". Patterns of speech can be described and characterized according to a model based on the interest of the user. By studying their words, we can understand the underlying root interest of the user. To find the intuitive key interest root of an act, speech, or situation, we must only ask ourselves, what interest is expressed in the central theme of the story. By studying communication, we will achieve a better understanding, and this will help us change what needs to be changed with less conflict. In order to best understand the key interest of the speaker from their words, it was necessary to examine the most basic, simple intuitive language that still carried meaning. This is difficult to do because there are so many basic words which still carry meaning. It is desirable to come up with a few terms which represent positions on a scale of interests that could possibly belong to a speaker. These words needed to be very generalized because if they were specific, too much information would be left out. After much thought, the following terms were picked to be the end points of a continuum of possible root interests:

Positive - Negative	To relate the overall tone of the direction of change of human strategy in the intuitive key interest being examined.

Unfortunately, this scale was so general what it was difficult to find consistent meaning in its use, and it was believed that we could be more specific and still remain general enough that all speech could be analyzed. The Positive - Negative roots of speech interest were left to describe changes over the next terms picked. It was believed that communication could hold too many nuances to be able to describe its root interest with the use of a single scale. For this reason, two scales were picked, and combinations of interests could be expressed by using them both simultaneously. These next terms were:

Inner - Outer	The degree of intensity implied by the intuitive key interest. Inner is low Intensity, Outer is High Intensity. Inner is movement of interest intensity backward to be passive. Outer is movement of intensity of interest forward to be more active.
Open - Closed	The degree of inclusion of others in the intuitive key interest. Open is extended to having multiple centers of interest. Closed is limited to only self centered interest

If each of these scales is viewed as a binary term much like On and Off of Boolean algebra, it results in four combinations of possible root interest. These root interests are:

Unifying is (Outer & Open)

Isolated is (Inner & Closed)

Conflicting is (Outer & Closed)

Coexisting is (Inner & Open)

Each of these terms is the name of a pattern which is embodied in human speech. When a person is speaking toward a unifying goal, he/she will use Open and Outer oriented words in their expressions. If a person is trying to isolate themselves, they will use Inner and Closed oriented words. Therefore, the combination of the interests possible with the use of these two scales seemed to yield an underlying meaning to the root interest of any speaker. Based on HAYAWIC logic however, there appeared to be another dimension to the interest of possible speech. For this reason, two more scales were defined:

Relative - Absolute The degree to which the intuitive key interest is qualified. Relative is the a common reference of interest by causally justified decision. If the interest is causally qualified then it is not arbitrary and it is a form that can be adjusted based on circumstance. If the interest is self referential or arbitrarily justified, then it is Absolute.

Determined - Undetermined The overall support of the intuitive key interest decision. If the interest decision is consistent and strongly supported, then it is determined , if it is inconsistent and partially supported, then Undetermined.

Once again, viewing these two scales as Boolean entities, there are four combinations of possible interest patterns described:

Informal Substance is (Undetermined + Absolute)
and can be thought of as Contradictory

Formal Form is (Determined + Relative)
and can be thought of as Inclusive

Informal Form is (Undetermined + Relative)
and can be thought of as Complementary

Formal Substance is (Determined + Absolute)
and can be thought of as Exclusive

In order to better understand how the combinations of these terms may relate to an object model, as was described in relation to computer science earlier, the relations between the terms were laid out using Object Model Notation. See **Diagram Five** and **Diagram Six**. **Diagram Five** shows the true relations expressed in strict notation, and **Diagram Six** shows how the combinations of terms are derived and related. The first combination of terms was in fact not unlike those outlined in the work done by Thomas on Conflict Handling Modes. It also seemed to fit well with the Cartesian Plane mentioned earlier in this paper. See **Diagram Three** and **Diagram Four**. After noticing how these terms could relate, they were laid out on a plane, and this was named the "HAYAWIC Interest Square Unity" because the root interest of any speech could be plotted on this square much like a function could be on a Cartesian Plane. See **Diagram Seven**. If the person has not totally determined their interest, then they may use words from more than one of these patterns, thus causing movement over the Interest Square Unity. This movement may go in either a positive or negative direction depending on the two strategies embodied in the interest. The overall strategy of the interest movement can then be classified as positive or negative.

Unfortunately, after analyzing many texts, it seemed apparent that not all interests could be adequately described. For this reason, it seemed that the interest square unity was valuable for the analysis of speech, but that occasionally the roots or pole positions of the square would have to be substituted for other scales. For this reason, the scales of the form unity may be substituted with other language to suit the direction of speech being examined. This formed a sort of "Form Unity Language" in which the vague and fuzzy terms describing the underlying root interest of a speaker could be applied to what they were saying, and conclusions drawn about their probably strategy.

Form unity square language- Any binary language (positive-negative, in-out, mono-poly, determined-undetermined, total-partial) The interest square unity is composed by any two pairs of binary languages.

Using the interest square, there developed a sort of HAYAWIC logic basic analysis to any text. Once the intuitive key interest is found intuitively, it is examined and categorized according to the HAYAWIC theory by using the square. After analysis, we can work backwards to categorize certain words as being usually associated with certain categories. These categories can develop into lists of vocabulary. Eventually a machine could use these vocabulary lists to work forwards to approximate the intuitive key interest of a story. This new analysis system also seemed to easily lend itself to a recursive idea. If any entity from the environment were picked, it was relatively easy to find an interest square which described the main components of that entity and how the components related to the environment. Each of these components could then be analyzed by using the interest square to find four more IS-A or Aggregation components related to it. In this way, the interest square could be used as a sort of spectrometer. When an entity or group of text was described using the square, it was broken into four aggregation or IS-A relationships, and any of the entities described in these relationships could again be analyzed to develop a deep understanding of the environment existing around the analyzed speech or idea. See **Diagram Eight** for a basic analysis, and **Diagram Nine**, and **Diagram Ten** for the recursive analyses spawned by the first. The relationships uncovered by this analysis are shown in Object Model Notation on **Diagram Eleven**. Because of its recursive nature, and the idea that each time an element is analyzed with the interest square unity it is broken down into four relationships included within it, we call the logic behind the interest square "Inclusive Math." In order to formalize the ideas of inclusive math, it is necessary to have some sort of notation to express the ideas while reading a passage. These notations will also prove useful to the analyst while attempting to determine the root interest of some language. This is because each passage may have its own unique interest expressed, and the analyst is interested in looking at the sums of all the interest square roots to determine the overall interest of the text. For this reason, some simple notation was designed, and this is illustrated in **Diagram Twelve** and **Diagram Thirteen**.

After analyzing many passages of text, there seemed to be some conceptual disagreement as to what should be the subject of the analysis. Inconsistent results were coming from individuals who seemed to concentrate more on what the text was saying, as opposed to individuals who seemed to concentrate more on who was saying it and why. It seems that both of these methods of using the HAYAWIC interest square unity are valid. This means that there may be more than one way to use the interest square on a single passage of text. Two main ways were discovered, and this was by word, and by action. This versatility is provided by Unilogic because actions are also forms. A number of segments of text from prominent speeches and books is analyzed in **Appendix One** at the end of this paper. Unfortunately, still there is much inconsistency with the results of analysis using the Interest Square Root, and for that reason, much more work is yet to be done.

Conclusion

The Unilogic Form is a Knowledge Engineering methodology to create a formative and normative mathematical system which may used as a simple tool. This logical approach can be applied by using the technical logical notation based on the Interest Square Root and Unity. This form of mathematics is referred to as Inclusive Math and was originally conceived of by Leibnitz and Spinoza, however they were unable to formalize their theories. Today, our technological age may enable us to go a step further. Inclusive Math uses symbols which can formalize physical and ethical relationships between entities based on the HAYAWIC Unilogic Form. The purpose of this Unilogic form is to overcome the gap between ethics and physics in order to unify natural and human science. This system is based on common sense and mutual universal interest. Such research could be used to computerize unilogic form, to create a software product which will interface computers with the computer illiterate. This HAYAWIC Inclusive Math research in human computer interfaces is possible and needed worldwide. What exists in mathematics does not have universal application in the fields of ethics or social sciences, including linguistics. When complete, this system will be based on pure scientific logic rather than religion or other views imposed with biased dogma. This type of logic could perhaps be useful for aiding strained relations between culturally diverse groups. Unfortunately, with the inconsistent results being obtained with the current use of this tool, it seems like much more work needs to be done before even thinking of making applications based on its use.

This type of analysis has brought up some very interesting questions. For instance, because inclusive math is able to analyze a passage of speech from any language and determine the root interest, can it be applied to a secular proof of an ethics system? Also, what sorts of computer applications could be made if this type of logic can be made consistent and reliable? Some have suggested that the most basic applications could be intelligent spelling checkers, grammar checkers, and even logic checkers for word processors. Taking this a step further, a computer could be designed as an electronic translator, or a decision support system specifically designed to handle negotiations between conflicting parties. This could be done if the computer recognized conflicting statements and was able to turn them into more acceptable unifying or coexisting statements which contained much the same information. Could this develop into true computer understanding? No one can say for sure, but the implications are both exciting and worrisome. Perhaps an electronic political analyst could be constructed to draw conclusions about the general public's interests by reading a set of newspapers and then help to inform our leaders so it is easier for them to stay in touch. The trouble with this far fetched kind of system is that it would form a double edged sword. The politician could also check with his "electronic politician" and learn exactly what to say and how, so that he could get support of the people without revealing his true intentions. Regardless, it is difficult to believe that there will ever be a machine more capable of making the logically wicked decisions that are required of our politicians every day.

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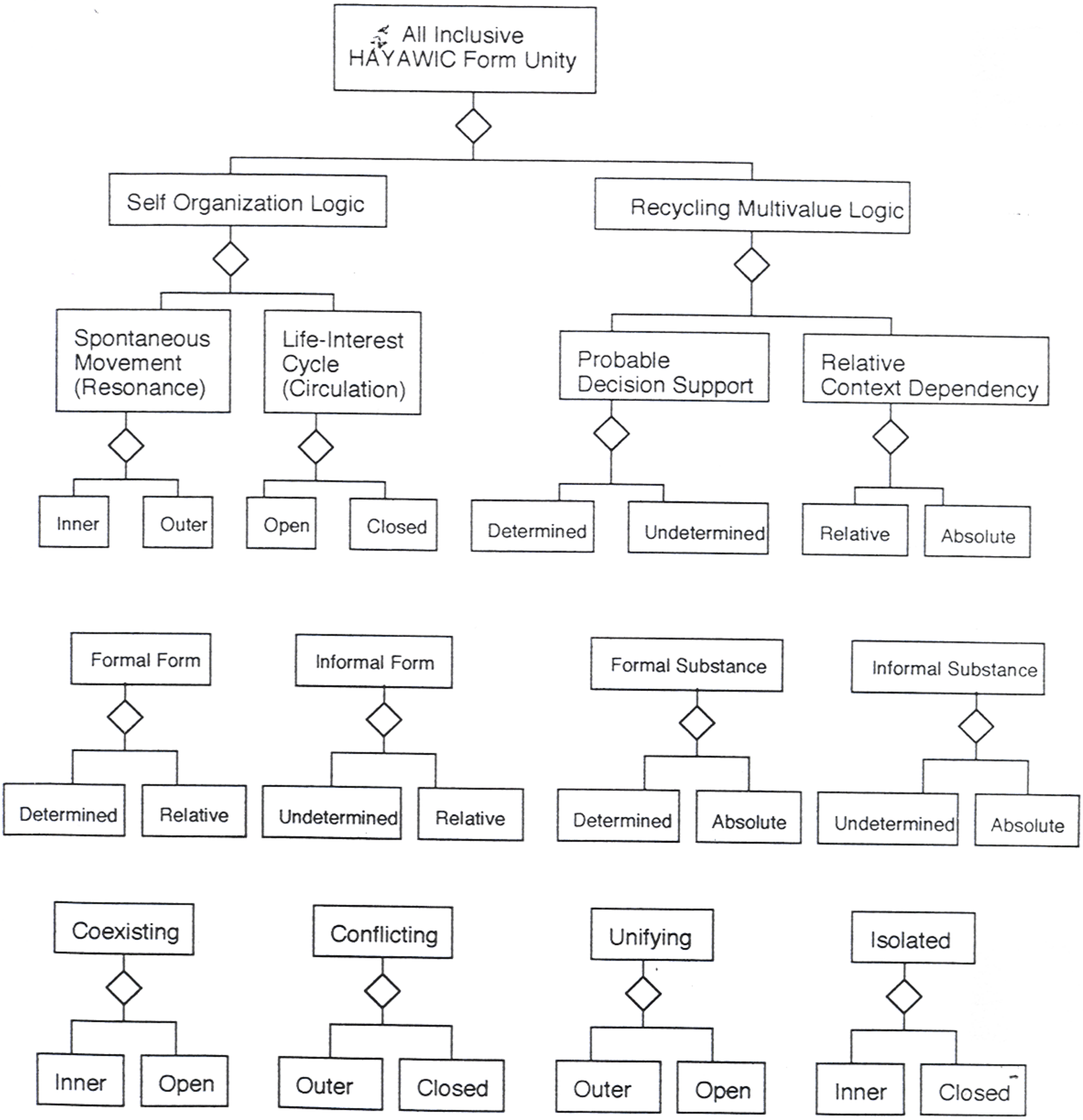
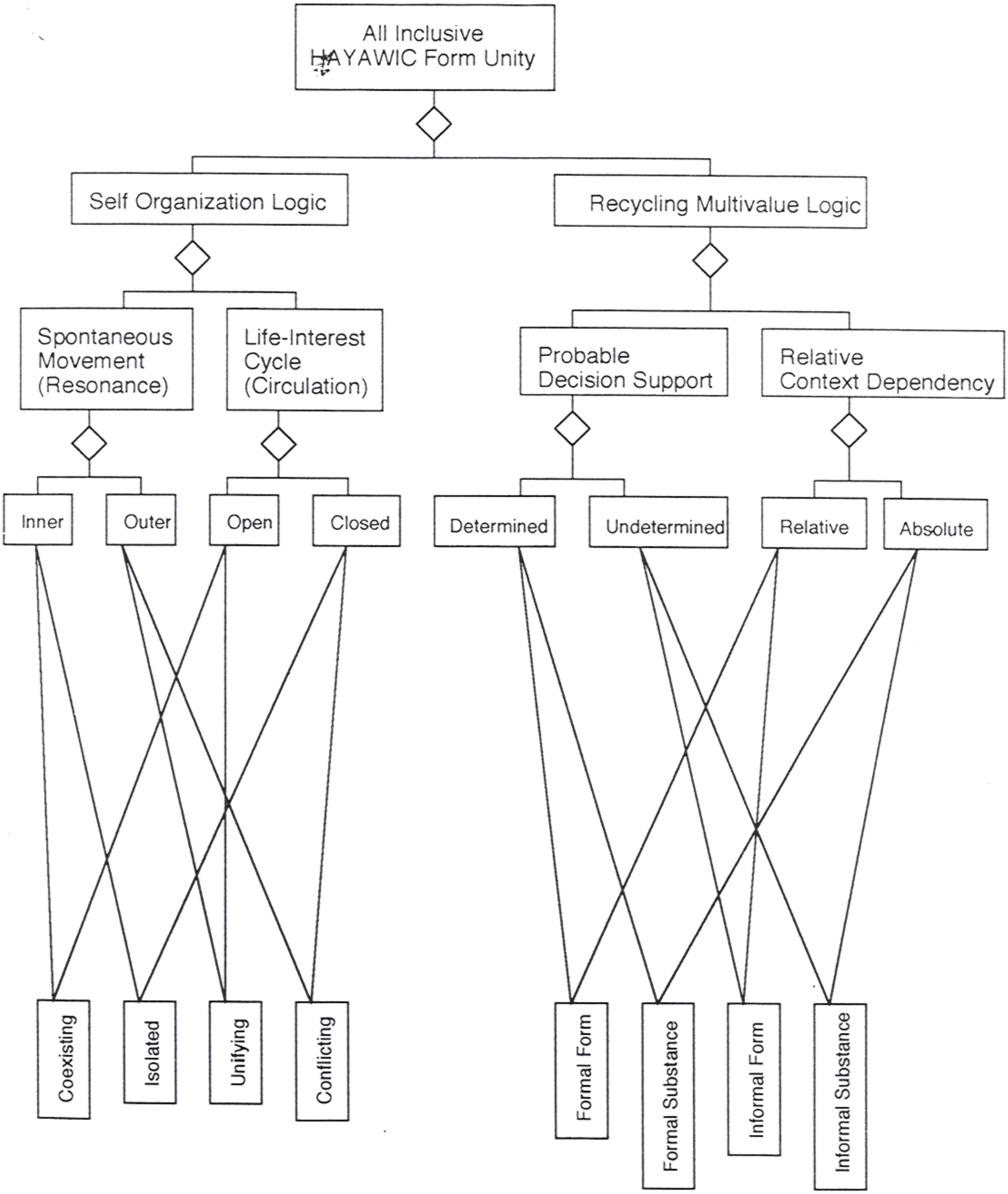
Hierarchy Describing HAYAWIC Form Unity and its Relation to the Interest Square Unity

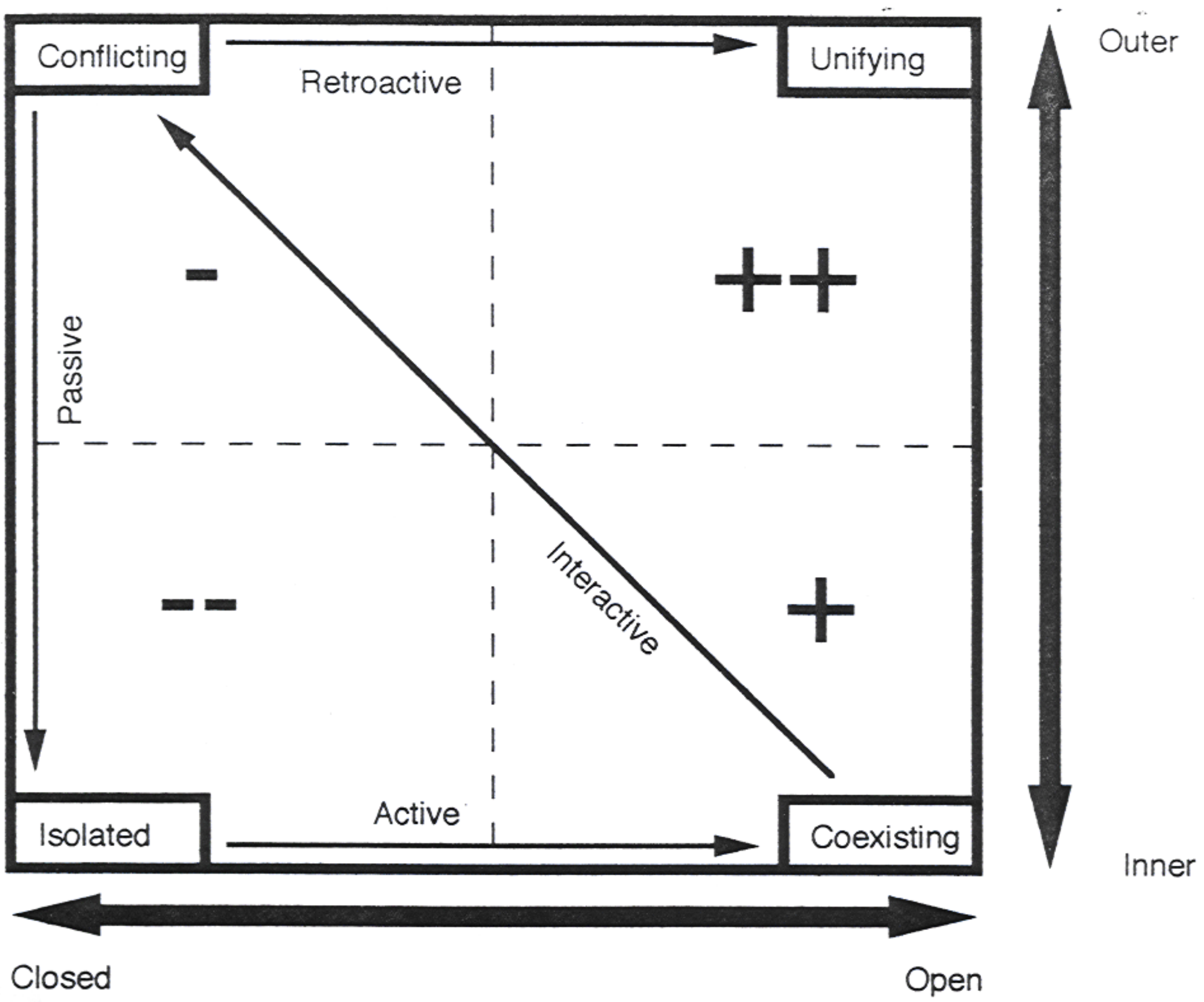


Hierarchy Describing HAYAWIC Form Unity and its Relation to the Interest Square Unity



Interest Square Unity

By: Dr. Raiek Al-Nakari



Vocabulary of HAYAWIC Logic Paradigm

Roots Forming the Interest Square Unity:

Positive - Negative
The overall tone of the direction of change of human strategy in the intuitive key interest being examined.

Inner - Outer
The degree of intensity implied by the intuitive key interest. Inner is low Intensity, Outer is High Intensity. Inner is movement of interest intensity backward to be passive. Outer is movement of intensity of interest forward to be more active.

Open - Closed
The degree of inclusion of others in the intuitive key interest. Open is extended to having multiple centers of interest. Closed is limited to only self centered interest

Interest Square Unity Term Definitions:

Each of these terms is the name of a pattern which is embodied in human speech. When a person is speaking toward a unifying goal, he/she will use Open and Outer oriented words in their expressions. If a person is trying to isolate themselves, they will use Inner and Closed oriented words. If the person has not totally determined their interest, then they may use words from more than one of these patterns, thus causing movement over the Interest Square Unity. This movement may go in either a positive or negative direction depending on the two strategies embodied in the interest. The overall strategy of the interest movement can then be classified as positive or negative.

Unifying is (Outer & Open)

Isolated is (Inner & Closed)

Conflicting is (Outer & Closed)

Coexisting is (Inner & Open)

HAYAWIC Logic Application:

HAYAWIC Logic applies to speech patterns because they are a form. We can study and classify a form by examining its most basic attributes. Alll communication exists to transfer one individual's ideas to another. When an individual communicates, they have a reason for doing so, and this is their "**interest**". Patterns of speech can be described and characterized according to a model based on the interest of the user. By studying their words, we can understand the underlying root interest of the user. To find the intuitive key interest root of an act, speech, or situation, we must only ask ourselves, what interest is expressed in the central theme of the story. By studying communication, we will achieve a better understanding, and this will help us change what needs to be changed with less conflict.

New Applications:

Once we understand the root interest of the speaker through analysis what can we do with this ability?

Computer Applications:

- Electronic Translators
- Electronic Negotiation Aids (DSS)
- Electronic Negotiators
- True Computer "Understanding"
- Electronic Political Analysts
- Electronic Politicians

More Powerful
(More worrisome)

Should we teach a machine to know exactly what we are thinking?

Remember: Terminator

A combination of sciences

Epistemology

New views of form and cycles(Patterns) Dr. Raiek Alnakari

Mathematics and Logic

Boolean Logic and Cartesian Plane

Computer Science

Artificial Intelligence and Machine Learning Dr. Ashwin Ram
Computer understanding structures "objects"

Management Science

Conflict Handling Modes Dr. K. W. Thomas

Psychology

Human Needs or interests Dr. Mazlo
Human patterns of understanding "gestalts"

Linguistics

Translation Methods
Idioms
Speech Patterns

HAYAWIC Logic Basic Analysis:

Once the intuitive key iterest is found intuitively, it is examined and categorized according to the HAYAWIC theory by using the square. After analysis, we can work backwards to categorize certain words as being usually associated with certain categories. These categories can develop into lists of vocabulary. Eventually a machine could use these vocabulary lists to work forwards to approximate the intuitive key interest of a story.

Roots Forming the Multivalue Logic Square:

Form unity square language- Any binary language (positive-negative, in-out, mono-poly, determined-undetermined, total-partial) The interest square unity is composed by any two pairs of binary languages.

Relative - Absolute
The degree to which the intuitive key interest is qualified. Relative is the a common reference of interest by causally justified decision. If the interest is causally qualified then it is not arbitrary and it is a form that can be adjusted based on circumstance. If the interest is self referential or arbitrarily justified, then it is Absolute.

Determined - Undetermined
The overall support of the intuitive key interest decision. If the interest decision is conistent and strongly supported, then it is determined , if it is inconsistent and partially supported, then Undetermined.

Informal Substance is (Undetermined + Absolute)

Formal Form is (Determined + Relative)

Informal Form is (Undetermined + Relative)

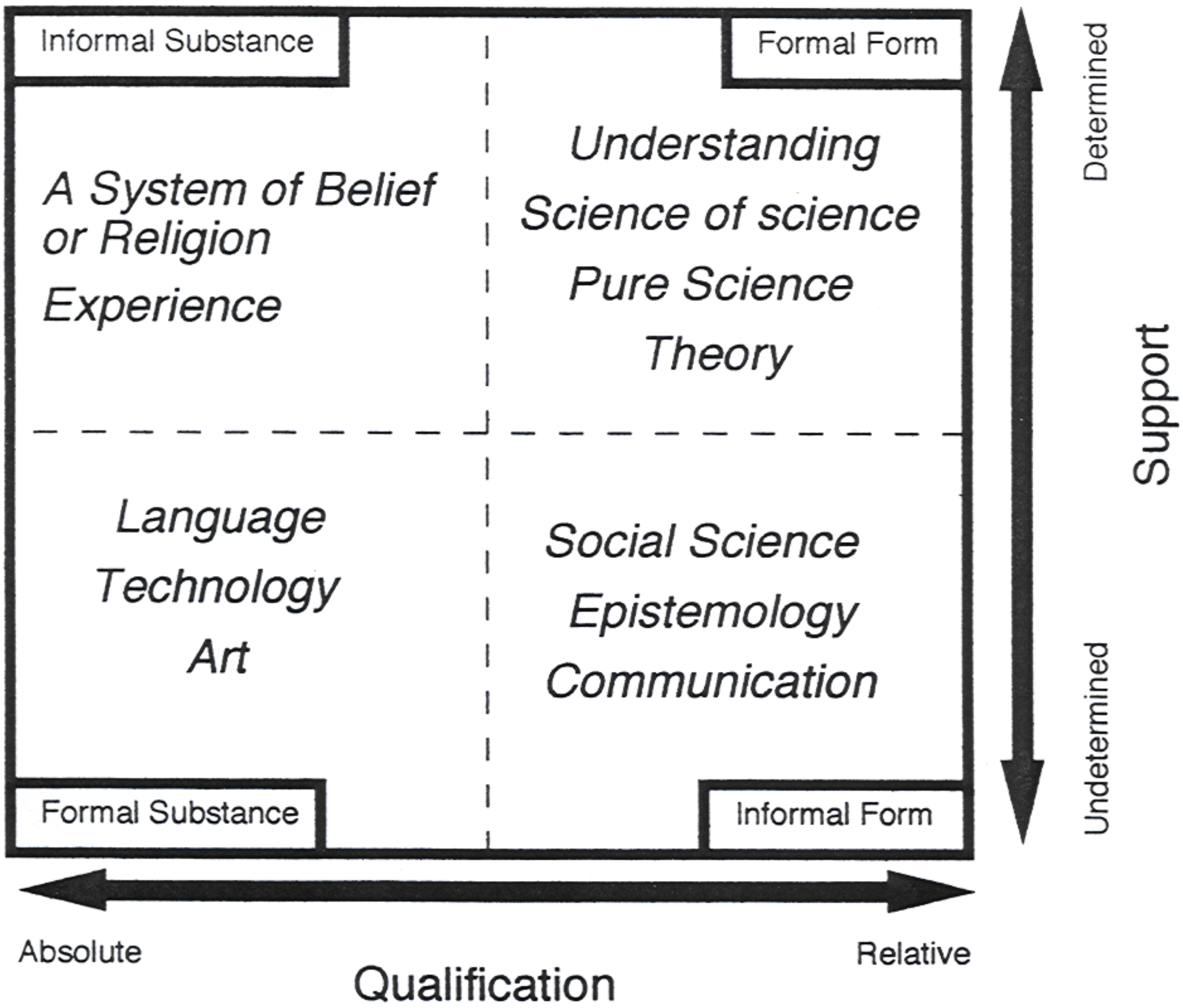
Formal Substance is (Determined + Absolute)

Interest square unity as general spectrometer of knowledge representation

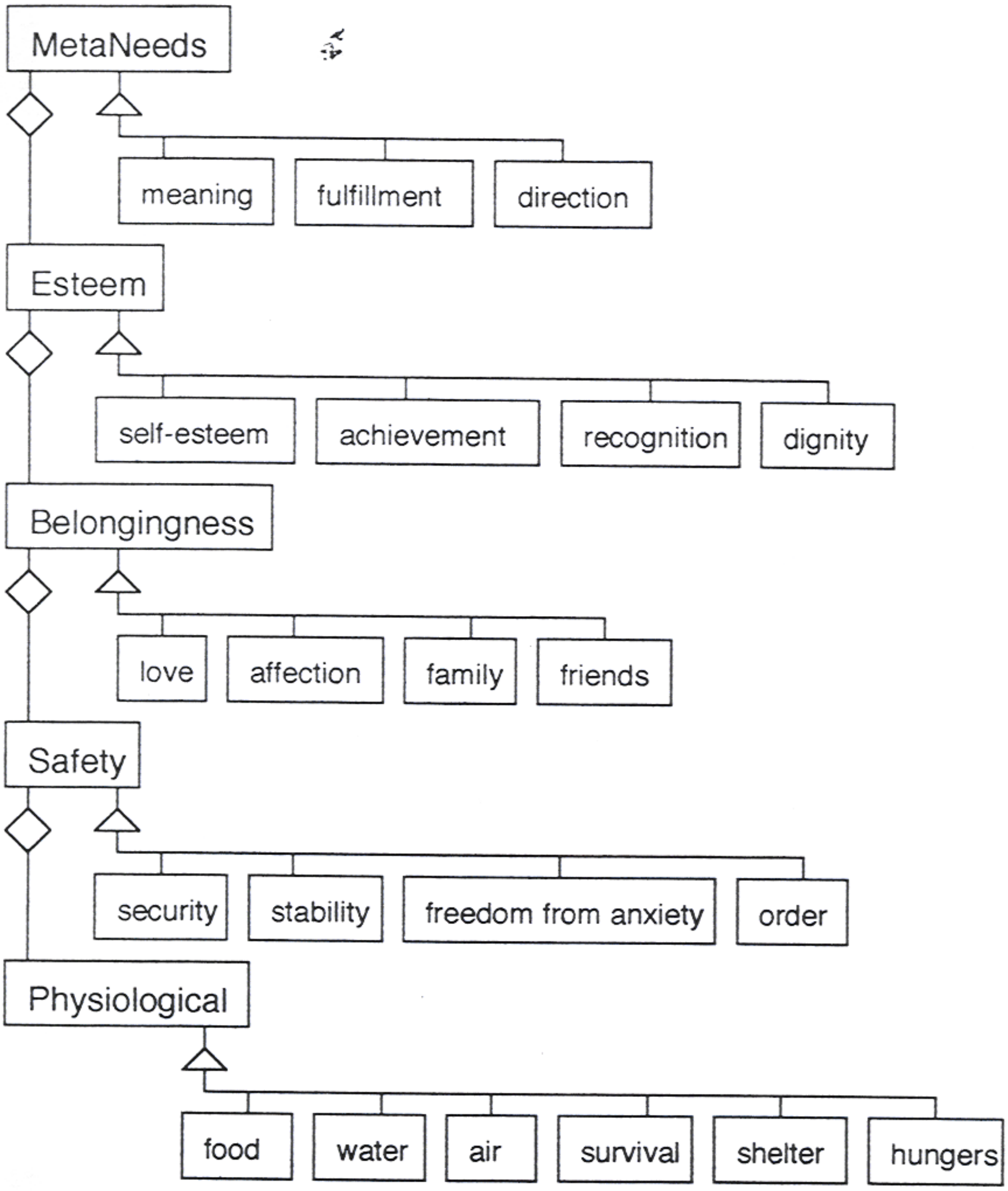
By: Dr. Raiek Al-Nakari

We can use the interest square unity in different versions to analyze design mdel any entity relation based in its inherited relation. This example shows the relationships between different elements that combine to make up general knowledge.

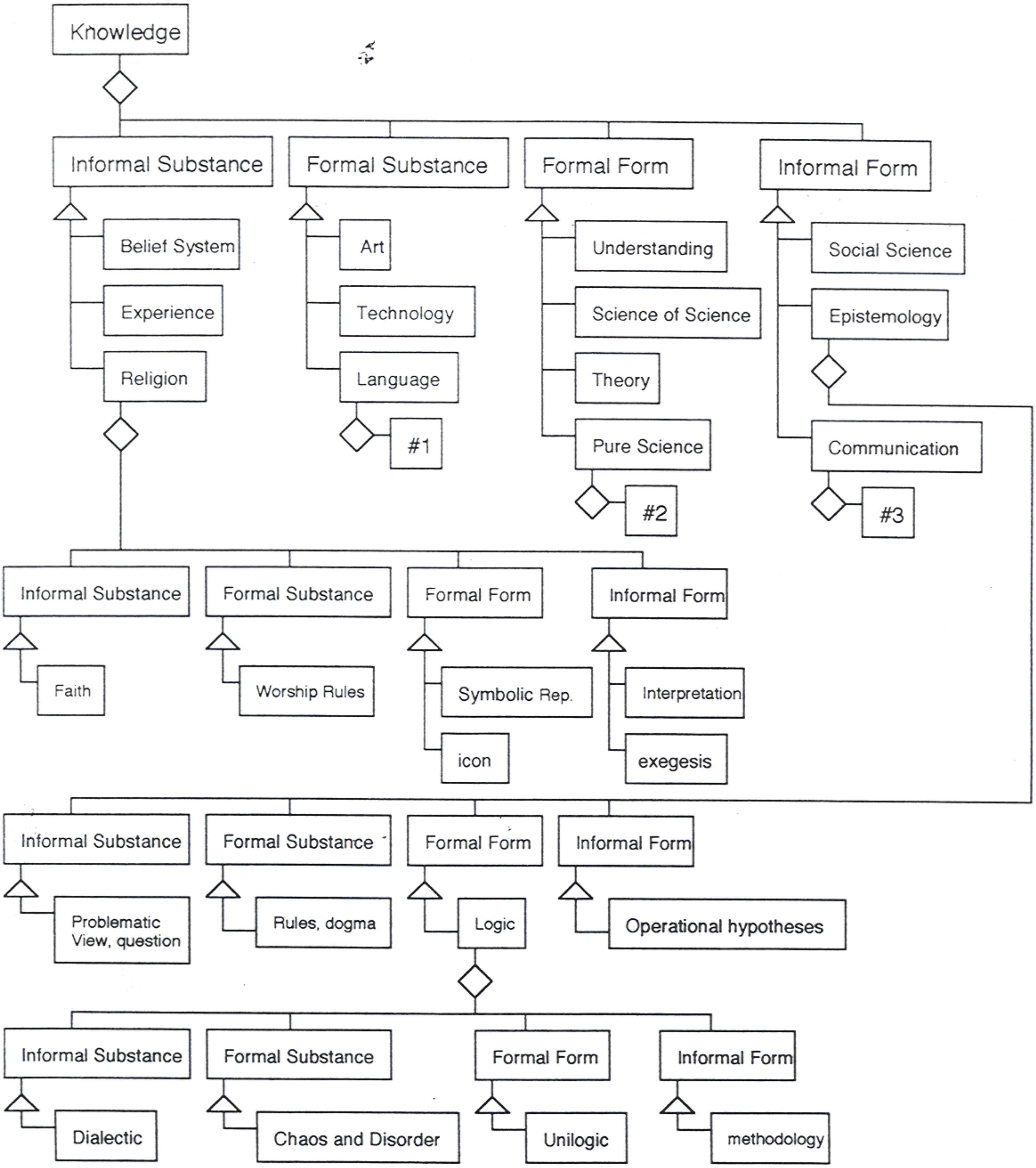
Spectrum of Knowledge

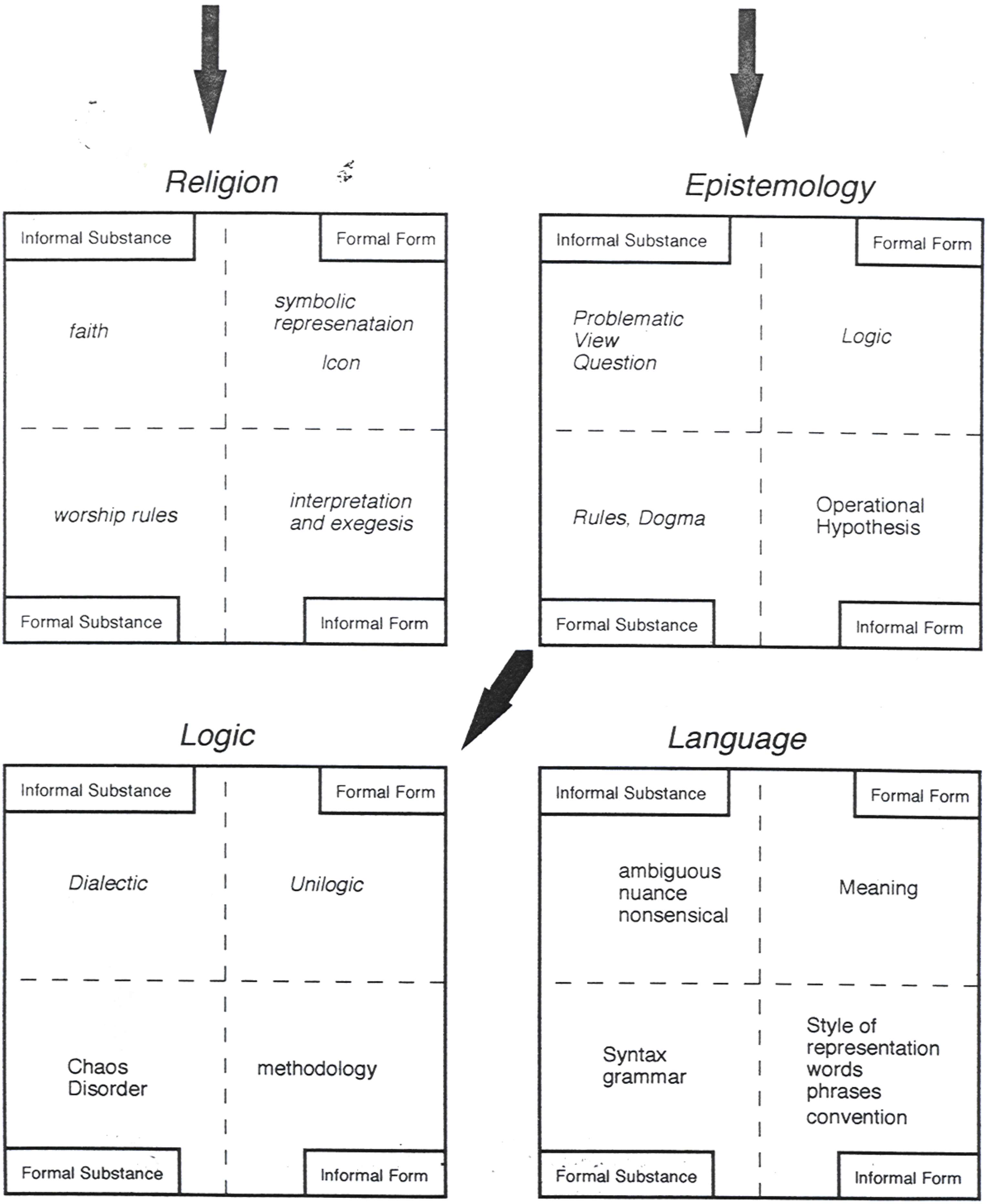


Maslow's Hierarchy of Human Needs expressed in Object Model Notation



Recursive Examples of Multivalue Logic Square Unity Analysis

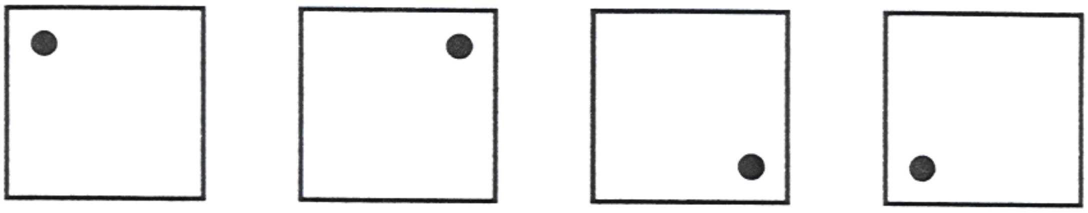



Religion
Informal Substance
Formal Form
faith
symbolic representaion
Icon
worship rules
interpretation and exegesis
Formal Substance
Informal Form
Epistemology
Informal Substance
Formal Form
Problematic View Question
Logic
Rules, Dogma
Operational Hypothesis
Formal Substance
Informal Form
Logic
Informal Substance
Formal Form
Dialectic
Unilogic
Chaos Disorder
methodology
Formal Substance
Informal Form
Language
Informal Substance
Formal Form
ambiguous nuance nonsensical
Meaning
Syntax grammar
Style of representation words phrases convention
Formal Substance
Informal Form

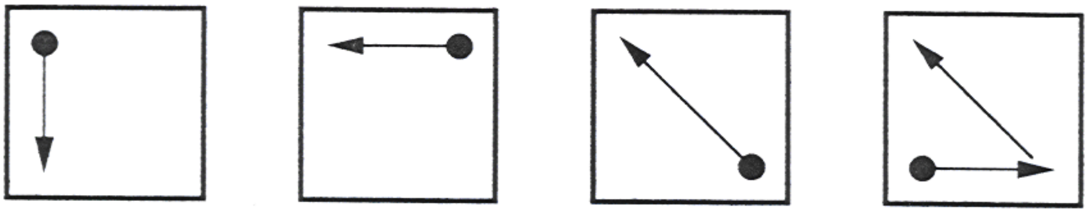
Notation

Simple Interest Square Unity Notation

Use a dot to show the corner of the interest square in which a determined statement belongs

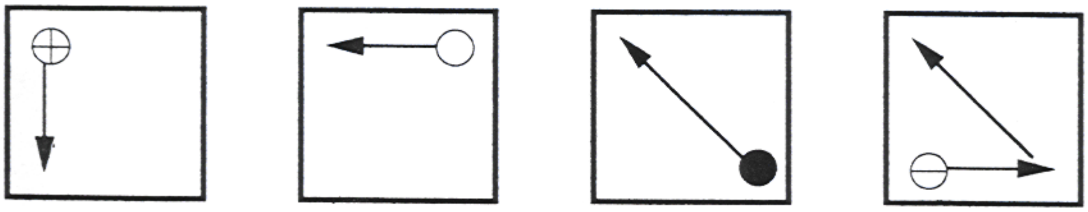


Use arrows to show movement of the interest or instabilities



Change the dots to encapsulate information about Multivalue square unity

Formal Substance	Formal Form	Informal Substance	Informal Form
(Determined + Absolute)	(Determined + Relative)	(Undetermined + Absolute)	(Undetermined +Relative)



Shorthand Movement Notation

Interest is becoming Passive from Conflicting to Isolated

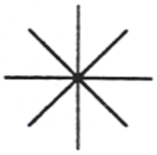
Interest is becoming Active from Isolated to Coexisting

Interest is becoming interactive from Coexisting to Conflicting

Interest is becoming Retroactive from Conflicting to Unifying

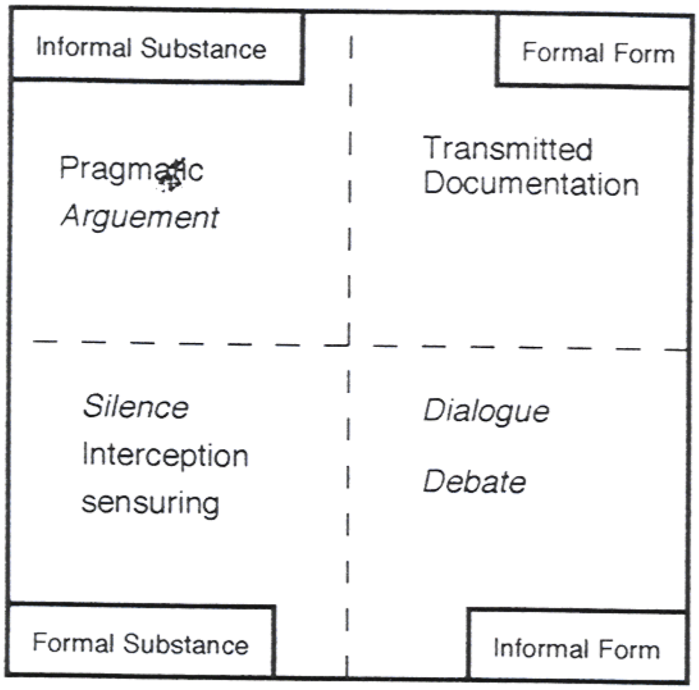
Interest has become more Neagtive from Unifying to Coexisting, Isolated or Conflicting or from Coexisting to Conflicting or Isolated or from Isolated to Conflicting

Interest has become more Positive from Conflicting to Isolated, Coexisting or Unifying or from Isolated to Coexisting or Unifying or from Coexisting to Unifying

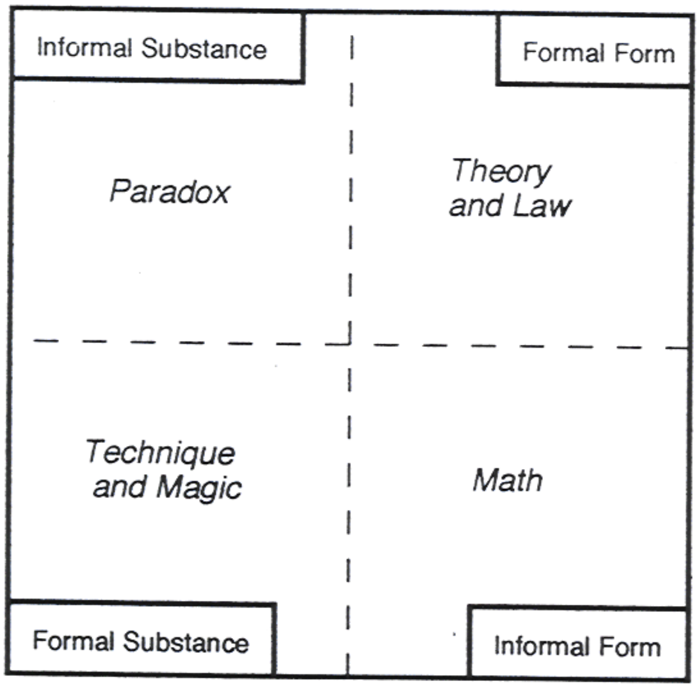


Interest has undergone a significant change of undetermined direction

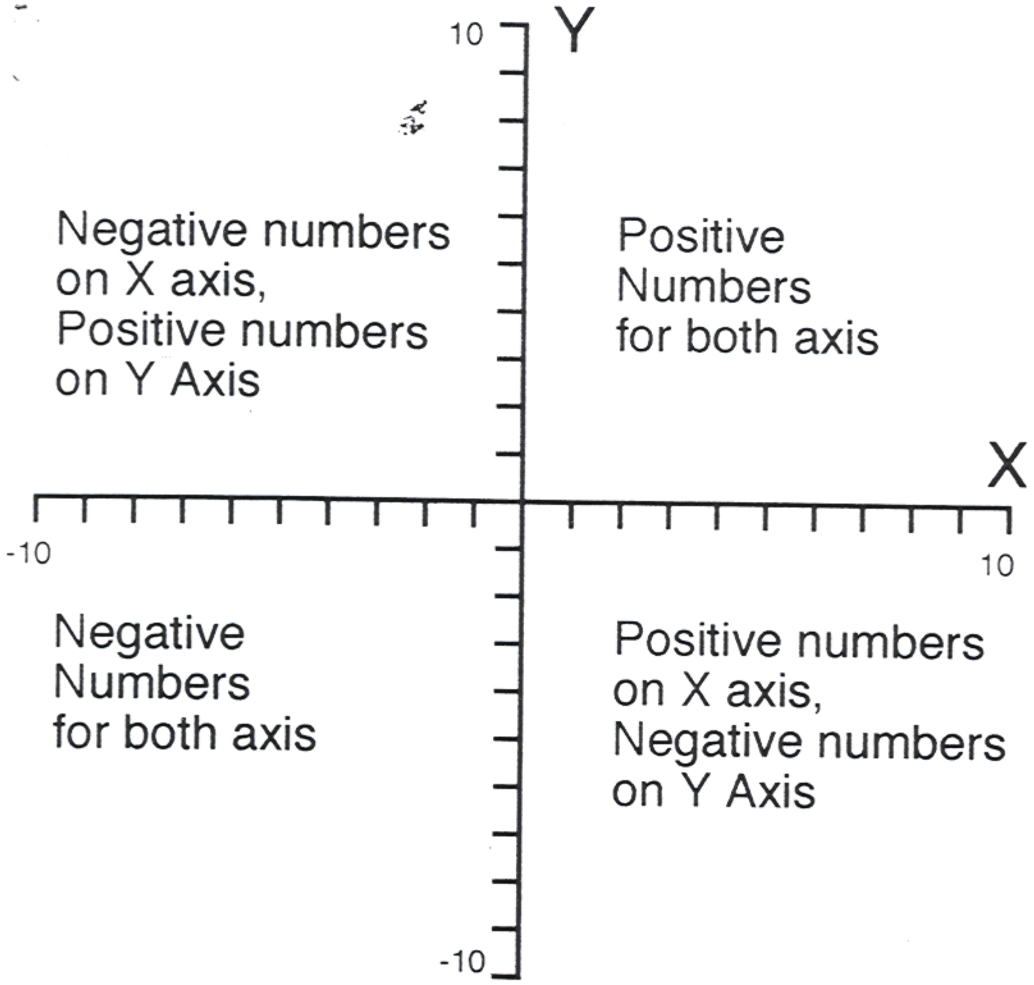
Communication



Science



The Cartesian Plane is a closely related mathematical analysis tool for functions



Conflict Handling Modes

K.W. Thomas