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Faculty-	**Dr. Jyoti**
E-mail-	**hod.ls@monad.edu.in**

Structure

1.   Introduction

Classification is a process of making classes of entities. A class is a set or group of entities (both abstract and concrete) having at least one common similarity. This similarity is called characteristics and is the basis of grouping or sub-grouping of entities. For example, all the students of a university class, whether male or female, of any religion and caste, coming from different states or regions, speaking different languages, having different political ideologies have one characteristics in common that is all of them are candidates for the same degree. A class can be of any size. All human beings make one class called *homo sapiens* by anthropologists. All Indians make one class. Similarly, all Christians make one class, Roman Catholics make another class; Indian Roman Catholics make yet another class, or Keralitie Roman Catholics may further make another class. There seems no end to making classes and subclasses of people or of any other entity. A class may even be of a single member.

2.   Meanings of Classification

Thus classification is a process of grouping of similar or like entities. It may be noted that there can be no grouping without division, as there can be no shadow without light, or no parting without meeting. Therefore, grouping implies division. Grouping and division are two sides of the same coin. We add a member to a group by separating it from others in the process of grouping and regrouping. Therefore, grouping and division are the basic processes of classification. But classification is more than endless grouping and sub-grouping. After the ultimate grouping starts the process of ranking within that is arranging the member of a group in a sequence. Even a small family can be divided further by status or age of its members. This is ranking. For example, say all the twenty student of a class may be further arranged in a row by age, height, educational merit or even alphabetically by name. Let us take the case of candidates appearing in civil services examination—they make one class by themselves. The final result by UPSC the divides them into two groups: successful and unsuccessful. Successful candidates are further ranked according to the marks obtained. That ranking is very vital in allotting them the service, that is, whether Foreign ,Administrative, Police, or Revenue, etc. All this is classification. Classification is a systematic and predictable order. A group of chemical elements is a class by itself.

Their grouping into Group 0, 1,2,3…8 is further classification. Their further arrangement according to their atomic number is classification and ranking. In the third sense, assigning each ranked entity a code or symbol to preserve their ranking is classification. For example, a class of 25 students may be first arranged according to educational merit then each students may be ranked 1, 2,… 25 or A to Y in order of merit for convenience of handling. This allocation of codes will mechanise and fix their ranking and consequent sequence or order.

Various manifestations of classification

Grouping and division seem primitive or elemental processes of classification. Looking at the bottom, classification is co-relation or discovering relations between entities. All members of a group are related to one another by some commonality. When we admit an entity into a group, a relation between that entity and group is discovered or created. For example, Physics is not only a member of the big class science, but also bears relation to Mathematics on its left and Astronomy on its right. Mathematics, Physics and Astronomy are intrinsically related to one another. In a family, which is always a class by itself, all members are related by blood. Hence classification is relation. A family is a natural calss.

Classification and Organisation

Since grouping and inter-group ranking are acts of organization, thus classification is organization. In fact classification and organization are inseparable. Now classification is considered as a tool for organizing in every sense of the word. Since organizations have structure, so classification is structuring and mapping. Difference between a heap of bricks and a mansion is classification. In a mansion every brick is positioned in an organized way to give a structure to the mansion..

In an organization all members are related and coordinated, so classification is co-ordination and control. Difference between a disciplined army and a chaotic mob is classification. Army men are coordinated and controlled while a mob is uncontrolled, though both the groups comprise of men.

Classification is matching and pairing this is implied in grouping of entities brought together. When we are ranking and arranging we are sorting and tabulating. So, matching tabulating and sorting are acts of classification.

3. Uses of classification in daily life routines:

Classification is a mental act and logical process of association and relation. It goes on every moment of life knowingly or unknowingly, deliberately or unconsciously. It is a fundamental preoccupation of life (Knight, David). Higher the life complex the classification. Any system be it biological (man), social (government, libraries, institutions) or mechanical (computers, machines) has to classify for successful functioning. All human beings, whatever they do, have to classify in every sense of the word. More sophisticated and intelligent persons have better sense of classification.

A postman classifies postal items for efficient and timely delivery. For quick, efficient and easy delivery a postal items is sorted (classified) many times at different stages between posting and delivery. A fruit seller sorts his fruits into categories, say, oranges, apples, grapes, and so on. Further each group say of apples is further sorted into species say Kashmiri apples, Simla apples, Golden apples, Green apples, etc. An astute vendor may further sort each species by quality and price. At every step of grouping the sorter is adding value to the items. Thus classification is value addition.

Record files in an office are arranged in some order, and within each file letters and memos are arranged in some known order. Without such an arrangement the previous record cannot be located easily and used. Books and other reading material in libraries are arranged, no doubt.

4. Scope of Classification

There is no act of life where classification is not used. It is applied everywhere. Being a neural activity it is a basic process to learn and develop. Opposite of classification is disorder and chaos. Classification can be done of all objects, entities, actions, thoughts and concepts. We can classify people, countries,languages, natural phenomena, plants, flowers, animals, libraries, philosophies, literature, artifacts, automobiles – what not. It is a universal constant. It is the only method to simplify, understand and comprehend a complex universe to discover its structure and impose some order over the otherwise chaotic world.

5. Classification is Knowledge Creation

English philosopher J.S. Mill (1806-1873) says that classification facilitates the operation of the mind in clearly conceiving and retaining in the memory the nature of an entity or phenomena. The human mind understands and memorises any new information and experience by classifying and categorizing it Someone has aptly and axiomatically defined empirical science as "a systematic classification of experiences". Therefore classification is training of the mind. It is often said that to learn to classify is itself an education. "Sharpness in thinking, clarity in expression, exactness in communication depend ultimately on classification", says Ranganathan (*Prolegomena*, XB2). Eminent educator John Dewey (1859-1952) was of the opinion that all knowledge is classification. Brian Buchanan quotes another English philosopher W S Jevons (1835-1882) as saying that "all knowledge, all reasoning, so far as it deals with general names or general notions may be said to consist in classification". Scientists seek recurring patterns, that is, generalizations in nature. Knowledge advances when a pattern is discovered. A new idea becomes knowledge only when it is related with some past knowledge. (All researchers cite references to previous works for acceptance of their research). Information becomes knowledge when given some context and structure. Thus concepts, information, knowledge and classification are inherently related

6. Process of Classification

Classification is a process of co-relation. It is a discovery. It is a way of thinking – thinking systematically and purposefully. It is an aid to memory and reasoning power. Nothing can be identified without it. It means to define an entity is to classify it first. For example, a gun is a firearm; a chair is a piece of furniture, a car belongs to the class of vehicles, and so on. All thought and reasoning underpins some process of classification and vice-versa. To define is to classify. Every definition is the process of classifying uniquely.

A group is divided or a member is included into a group on the basis of some characteristic. A characteristic is an attribute, quality or property of an entity which relates it with or separates it from a group. For example, a family is related by blood and common lineage. Group of people may be divided into males and females. Here "gender" is the characteristic of division. All the students of a university may be divided into under-graduate, postgraduate and research degree students. Here level of education is the characteristic. Books in a library may be arranged on the basis of their

subject content. Thus a characteristic is the basis of division. Successive application of right and relevant characteristics produces deeper and finer classification.

Classification is a process, a logical visual method of simplification and understanding. No phenomena or object can be understood without classifying it. It organizes all sorts of entities and phenomena and depicts their place and status in the universe. Thus classification is the ultimate organiser Classification can be both of abstract and concrete entities; of ideas and things. It is essentially a life process of learning, doing and living successfully. Human civilization progressed as primitive humans learnt to classify the visible entities and phenomena around. Let us say man learnt of edible and non-edible things; divided animals into useful and harmful groups. It was another (more sophisticated) act of classification when man related clouds with rain, and rain with growth of vegetation and life; and related certain herbs with treatment of certain diseases. All that became knowledge by and by. It has rightly been said that all knowledge is classification. And knowledge is the sole factor in the progress of human civilization.

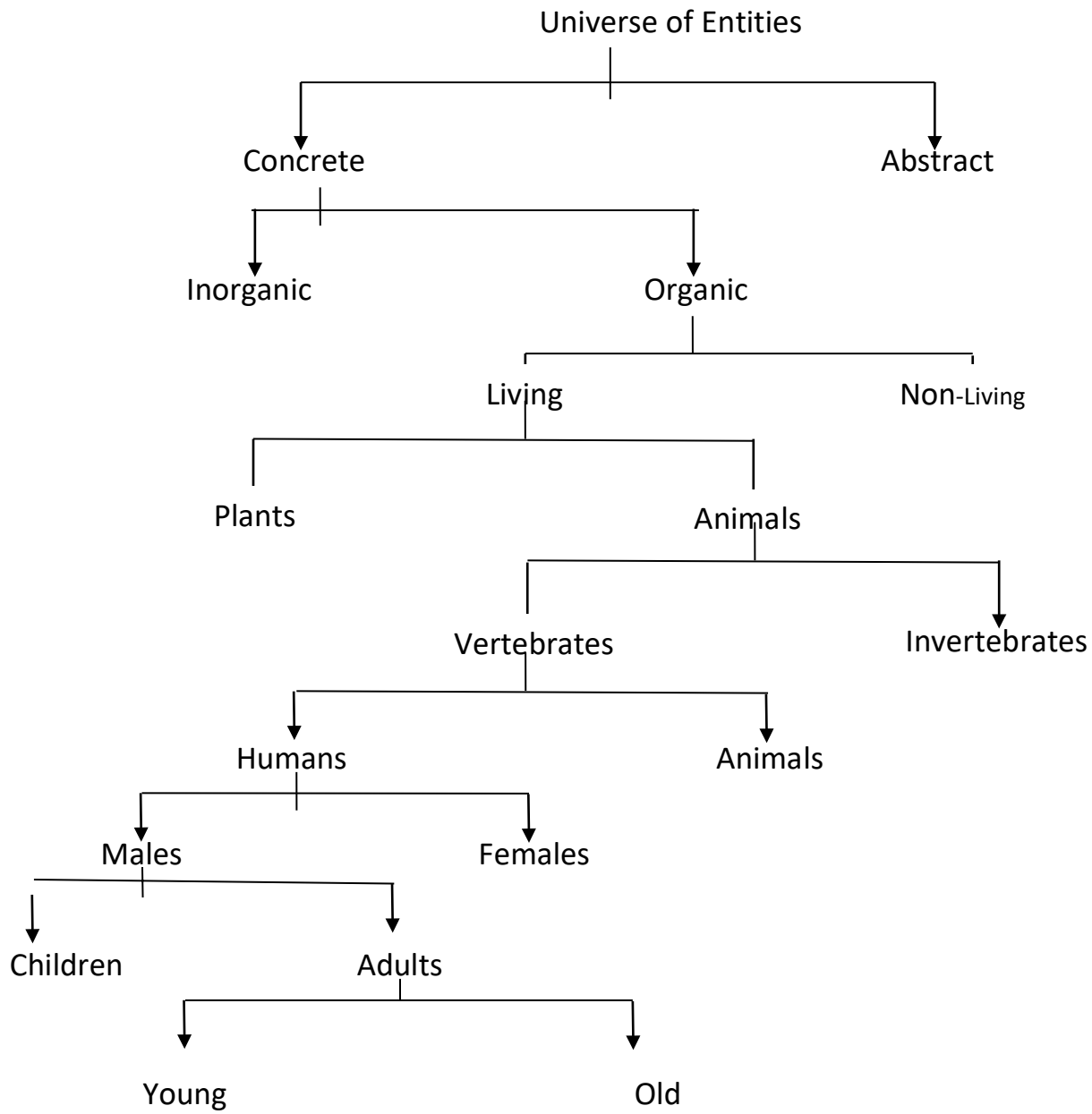## 6.1. Genus-Species Relation

A class or group is logically called a genus, and the characteristic is the difference we add to produce species:
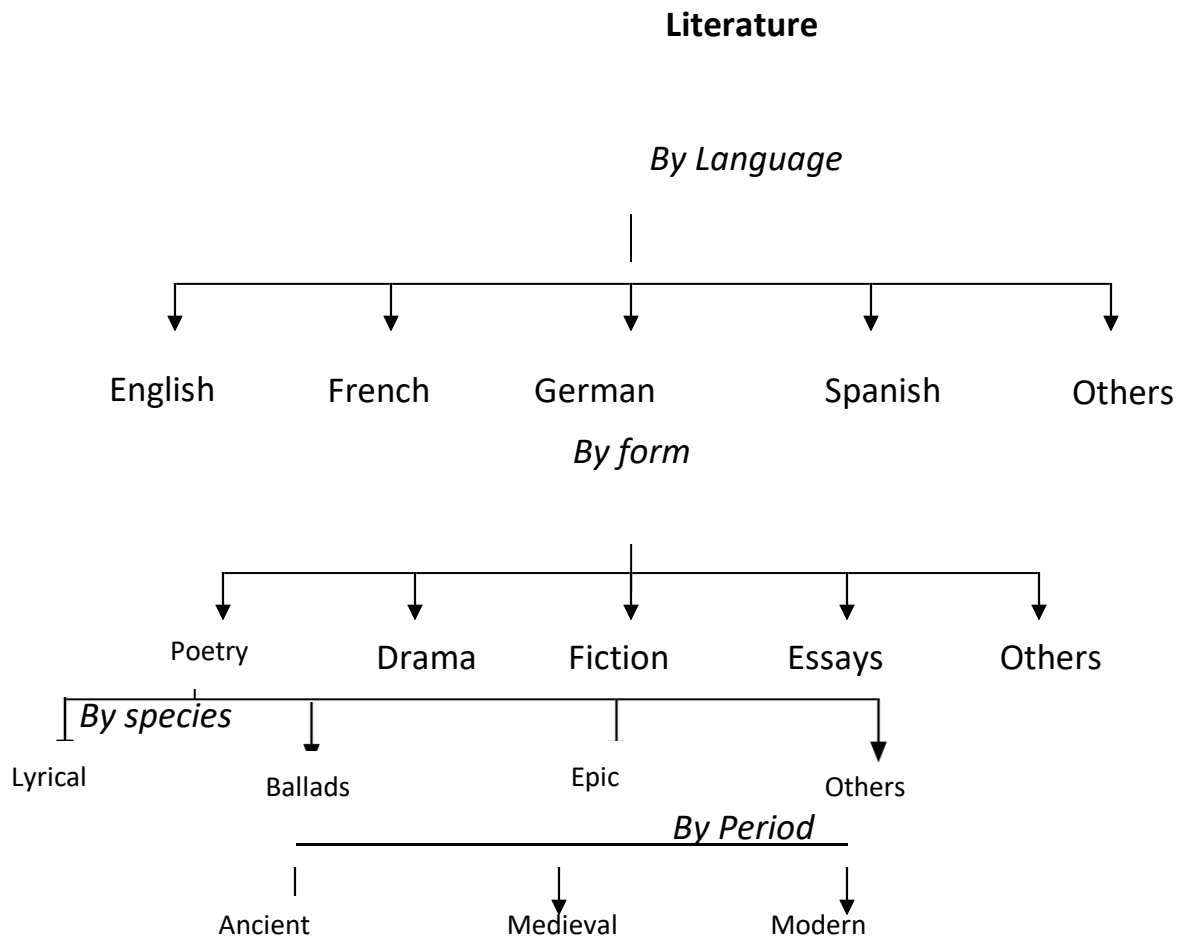
Genus + Difference = Species

Eg., Tables + Material = Glass tables, Wooden tables, Plastic tables, Metal tables, etc. Here material is the characteristic to divide the universe of tables.

Here table is genus, material is the difference, and glass tables, wooden tables, etc. are species of table. Ancient Philosophers applied dichotomous method to divide the universe into two groups at every step. Greek philosopher Porphyry (232-304 AD) used this method and the resulting groups and subgroups are eponomously known as tree of porphyry. This method, however is artificial, as every phenomena is not dichotomous in the universe : there are many shades between white and black. Modern method is to divide by genus – species, or by whole-part methods.

Division by Dichotomy

Universe of Entities

Concrete   Abstract

Inorganic   Organic

Living   Non-Living

Plants   Animals

Vertebrates   Invertebrates

Humans   Animals

Males   Females

Children   Adults

Young   Old

Let us apply genus-species to literature by applying characteristics

Literature

By Language

| English | French | German | Spanish | Others |

By form

| Poetry | Drama | Fiction | Essays | Others |

By species

Lyrical   Ballads   Epic   Others

By Period

Ancient   Medieval   Modern

We proceed from broader to narrower classes by applying respectively the characteristics of language, form, species, and period. Nature, Quality and mode of application of these characteristics is very important. To classify an entity we must have some knowledge of it. A guitar cannot be classified unless we know it is a stringed musical instrument. To classify cricket (game) we must know it is an out-door game played with a bat and ball. To classify the works of George Bernard Shaw we must know he was a 20th century English playwright

Nature of Classification

Logically speaking classificatory groups are not absolute; classifications are relative as something is classified with reference to others. An entity cannot be classified or ranked in itself. It takes two to create a classification. It means a unique entity cannot be classified. It is a class of its own. No classification is absolute also means that classifications are not permanent. Classifications are not real even. No classification exists in Nature. All classifications are man-made, and made for a purpose. No classification is good or bad; these are unhelpful or helpful to a varying degree. It all depends upon the purpose of classification. A classification which serves its purpose well is best, whether logical or not. Logic of classification depends upon the characteristic chosen and the order in which these are applied. A large group of persons could be divided by age, gender, religion, race, nationality, mother tongue or colour of skin, hair or eyes, and many more characteristics. Each time it will result in different grouping. Choice of characteristics and the order in which these are applied one after the other will depend upon the purpose of classification. For example, a farmer would place birds, rats, insects and monkeys in one group as enemies(pests) of his crop. A scientist may laugh at such a classification. Both are correct, as their purpose in different. A farmer produces food while a scientist produces knowledge. A child or layman thinks that birds, butterflies and bats belong to the same class as all these can fly, while for a scientist all the three belong to three different classes, each of its own. Different classifications produce different maps or depict different structure of knowledge depending upon the society and time of its origin. Classifications are not neutral. These are mirrors that reflect their time, purpose, place and society. Vedic classification is quite different from the one produce by Aristotle. Classification of knowledge by English philosopher Francis Bacon (1561-1626) is quite different of the two. No two classifications are similar.

Classification as a Tool

According to Aristotle (384-322 BC) classification is a theoretical, practical and productive science. As the saying goes theory is the most applied knowledge, we can arguably say that classifications are always practical and designed for some purpose. As already said, classification is a tool for simplification, understanding and organization. Without organization nothing works. All the uses of classification may be summed up as : 1) Management 2) Aesthetics 3) Knowledge creation.

Organization is for better management. Classification organizes anything and everything : life to a shoe store; knowledge to libraries. A library, archive, theater auditorium, UN Assembly meeting, postman, grocery shop all use classification to save time. It ultimately leads to economy of time, money and manpower.

Aesthetics is the science of beauty. An arranged store appeals visually to the visitors. Classification was also described as pairing and matching. So a housewife matching the colour of her room curtains with other items in the room is essentially doing an act of classification. A gentleman matching the colour of his tie with the suit he is wearing is an act of classification, too. Here the purpose is purely aesthetic to feel good and look good. Selecting a life partner for marriage involves a series of latent classification acts. Marriage is selection and pairing – both are manifestation of classification. Characteristic selected for marriage are: age, religion, caste, physique, looks, job, financial status, educational qualification, values and attitudes, and many more. In which order you apply these characteristics depends upon your need and values. Marriage is a selection, and every selection is classification

Philosophers, scientist, researchers classify to study and understand the growth and structure of knowledge. It is to outline and map the vast sea of knowledge. Without this map it will not be possible to navigate and further explore this boundless sea. A formal researcher has to select data, tabulate data and co-relate data to create or discover new information. All the three stages are acts of classification. Hence classification underlies research – latter is knowledge production.

Classification is pattern making and pattern recognition. Computer retrieves information by patterns recognition and comparison, hence works by classifying; so does our brain which always works by association, grouping (integration) and pattern recognition.

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7. Knowledge Classification

As said earlier, classification can be of any object, phenomena, concept or acts. Classification and categorization of knowledge *per se* is called knowledge classification. Thinkers in all ages have tried to make categories of knowledge to understand its nature, categories, boundaries and growth. That became knowledge classification.

Knowledge classification is outlining and mapping to depict structure and boundaries of knowledge. It leads to better understanding of its history, nature, kinds, properties, growth and also gaps in it. Thus knowledge grows by its own classification. It becomes guide for the educationists, scientists and librarians. Knowledge classification is both speculative and empirical, and is a province of philosophers and scholars. From time to time philosophers, scientists, educationists and the likes have formally categorized entire known knowledge to outline its boundaries and show the structure of knowledge. For example, Hindu Vedas (1500 BC) divided knowledge into four categories in the order : *Dharam, Arth, Kam, and Moksh*. Aristotle (3rd century BC) divided knowledge into three parts : Theoretical, Practical and Productive, and further divided entire knowledge into ten categories. A propedia is classification of knowledge and vice-versa. Knowledge is defined as sum total of ideas, theories, experiences, history, feelings, values, sciences, symbols, arts, facts, fiction, myths collectively conserved by a society. Classification of knowledge is essential for its simplification, understanding and progress. Without its organization no further growth and progress can be made. For example, a new idea or a discovered fact will not become knowledge until it is related and integrated with the existing knowledge. Therefore, it has aptly been said that all knowledge at the roots is classification of phenomena.

8. Limitations of classification

Classification like the value of π (pi) it is never exact. It is only approximate. Classifications are social, not natural. An entity is not unitary but multidimensional. A person may be grandfather, father, uncle, brother, engineer, Indian and Punjabi all at the same time. Where would he be classed? A dog is a canine animal, domestic pet, mammal. It is obviously subjective or local. Two classifiers may widely and doggedly differ on the correct classification of a given entity. The nineteenth century English philosopher W.S. Jevons (1835-1882) had criticized classification as a logical absurdity. We have to work with imperfect tools.

9. Summary

Classification is a universal constant. It is an activity that goes on every moment in every act of life and society. It is no exaggeration to say that we live by classifying. Broadly speaking, classification is the process of making classes or set of entities on the basis of their similarities. Grouping also implies separating as selection also

implies de-selection or rejection. The criterion or basis of grouping is called a characteristic. Quality of final classifications will depend upon the right choice of characteristics and the right order of their successive application to produce subsequent sub-grouping. Ultimately classification is co-relation between two entities. It has numerous manifestations like sorting, grouping, categorizing, ordering, arranging, ranking, structuring, mapping, coordinating, matching, pairing, and pattern making. Classification can be made of all entities and phenomena under the sun. Philosophers, scientists, librarians, shopkeepers, postmen, housewives all do classification for different purposes. The four broader uses of classification are organization, economy, aesthetics and productivity. Many philosophers right from Aristotle have done classification of the entire universe of knowledge. Scientists have produced taxonomies of plants, animals and chemical substances. In libraries we apply knowledge classification to organize our books, databases and other reading material both in print and electronic form. Yet classification has its own limitations. Classifications are manmade, not natural. Therefore these vary from society to society and vary with time.

10. Glossary

Characteristic: It is an attribute, basis or criterion of division or grouping. If a group is divided into Hindus, Muslims, Christians, Sikhs then religion is the characteristic. Quality of the characteristic will determine the utility and aptness of classification.

Class: A set of entities having at least one characteristic in common. A class can be small or big, even universally big.

Classifier: Any person who classifies. Usually it refers to a person who classifies books in a library by operating a classification system.

Classificationist : A person who designs a classification system.

Classification : It is a process of grouping entities on the basis of likeness or some underlying relation. Ultimately, classification is organization and co-relation. It is grouping, selecting, sorting, ordering, tabulating, ranking, mapping, preparing classification schedules and operating classification systems.

Entity: Any object or phenomenon that exists. In this universe anything we perceive is an entity

Genus and Species : Genus is any original universe to be divided into species by adding some characteristic to the genus. These are relative terms. A father is a genus for the children; when children become father/mother they will be genus for their own children.

Universe of Knowledge: Refers to the entire corpus of knowledge known to mankind

11. References and further readings

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