Stories of Taxonomy: Uncovering Differences between Folk Taxonomy and Taxonomy in Systemic Functional Linguistics Theory

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Abstract

This study aims to investigate the developmental concepts of folk taxonomy and taxonomy in Systemic Functional Linguistics theory and to compare differences between both concepts and its criteria underlying how to name and classify things in the world. Documentary analysis method was used to analyze data from the secondary sources, including websites, textbooks and academic articles. The findings reveal that folk taxonomy and Systemic Functional Linguistics taxonomy share some common purposes of naming and categorizing things in terms of making common understanding and avoiding confusion between describers and communicators. In terms of differences, findings show that both types of taxonomies have been developed in different ways with different principles of naming and categorizing things. On the one hand, folk taxonomy has been developed from the experimental

ways, especially researching about plants and herbs in order to name and classify them into levels and kingdoms by concerning on researchers' experiences, expertise, language, and culture. The Systemic Functional Linguistics theory, on the other hand, naming and categorizing things have been developed by observing and studying from the development of language, mode of meanings, and functions of language in a society.

Keywords: Folk Taxonomy, Taxonomy Development, Systemic Functional Linguistics Taxonomy, Categorizing Factors

Introduction

Taxonomy is one of the most significant issues in language studies. It is related to classifying or naming things in the world (Ziser, 2004; Guerra-Garcia, Espinosa, and Garcia-Gomez, 2008). Taxonomy, in another aspect, is regarded as a part of systematics, including classification, but emphasizes more on systematic concepts, including both taxonomy and phylogeny (Guerra-Garcia, Espinosa, and Garcia-Gomez, 2008). In other words, the systemists are not required to know the regulations of taxonomy, but the taxonomists must have background knowledge about phylogenetic systems in order to systematize new words for world knowledge (Wagele, 2005 cited in Guerra-Garcia, Espinosa & Garcia-Gomez, 2008).

Basically, the taxonomists study and rule words to discuss the world, especially the organic names and have a communicative role to wide groups of people. As the recent period is called globalization, internet is utilized for the purpose of distributing and linking information from taxonomists (Knapp, Rainbow, Smith, and Taylor, 2002). Therefore, taxonomy is a part of the systematics and it is the science of classification focusing on naming and categorizing things, making rules or disciplines for classifying objects, recording vocabulary, distributing words to the world, researching new things happening in the world, and making databases for people to assess and learn on website or other accessible storages. Currently, the term 'categorization' is being interested in the linguistics work, particularly in the cognitive field. There are some evidences found in the Aristotle's concept on categorizing things which is not relevant to any semantic categories. This phenomenon impacts on the attention of the cognitive linguists to retheorize a prototype theory (Halliday & Matthiessen, 2008). On the other hand, Systemic Functional Linguistics' (SFL) aspect on categorization is particularly focused on how meaning is naturally constructed and construed in the texts (Halliday & Matthiessen, 2008). This paper aims to study the background information about the development of folk taxonomy and the taxonomy in SFL theoretical perspectives and to compare differences between them. From these two research purposes, two research questions are proposed:

1) How do a folk taxonomy and a SFL taxonomy develop?
2) What are the differences and similarities between both types of taxonomy?

Literature Review

Originally, the term 'taxonomy' is derived from Greek which refer to 'taxis'. It means an arrangement and 'nomos' means law (Guerra-Garcia, Espinosa, and Garcia-Gomez, 2008). Taxonomy is important in theoretical and applied biology, including agriculture and forestry, biological control, public health, wild life management, mineral prospecting through the dating of rocks by their enclosed fauna and flora, national defense, environmental problems, soil fertility, and commerce (Guerra-Garcia, Espinosa, and Garcia-Gomez, 2008). Basically, taxonomists play roles in providing vocabulary, especially the organic names and have a communicative role to wide communities of people. The Internet has been distributed in the system of information linkage in the form of various revolutionized approaches for taxonomical information (Knapp, Rainbow, Smith, and Taylor, 2002).

Apart from the definitions and roles of taxonomy, the relationship between taxonomy and systematics has been interested and proposed by many scholars in the field. The term 'systematics' is derived from the Latinised Greek called, 'Systema'. It means making a sequence of living things, according to "phylogenetic

interrelationships" or "evolutionary relationships" (Guerra-Garcia, Espinosa, and Garcia-Gomez, 2008, p. 16 - 17). Taxonomy is regarded as a part of classifying systematics of both taxonomy and phylogeny (Guerra -Garcia, Espinosa, and Garcia-Gomez, 2008). In other words, the systemists are not required to know the regulations of taxonomy, but the taxonomists must have background knowledge about phylogenetic systems in order to systematize new words for world knowledge (Wagele, 2005 cited in Guerra-Garcia, Espinosa, and Garcia-Gomez, 2008).

Hence, taxonomy is a part of the systematics and defined as the science of classification which focuses on naming and categorizing things, making rules or disciplines for classifying objects, recording vocabulary, distributing words to the world, researching new things happening in the world, and making databases for people to assess and learn on website or other accessible storages.

In terms of naming and classifying, they are crucial for human being, particularly in supporting common knowledge for diversity groups of people to communicate to each other and make senses with the variety of living things in the world (Godfray, 2002). Regarding Winston (1999), people naturally give names according to many factors such as language, region, and knowledge. Different names probably refer to the same thing and vice versa. To record all species which have been found into storages and make it possible to precisely communicate in daily conversation, the scientific process

for naming and describing are taken into account. Names and its descriptions, which are scientifically created, are formally accepted and used as a formal reference for identifying and categorizing things. This is due to the description basically provides specific details of types and its features (Winston, 1999). In addition, having scientific names help us to avoid the confusion while using common names (Reeb, 1997) and to manage the diversity of things according to taxonomic hierarchies (Taverna, Waxman, Medin, Moscoloni, & Peralta, 2014). Reeb also elaborates that either the plant kingdom or the animal kingdom places all living things because they are belonged to the sub-divisions of the term 'kingdom', which is regarded as the highest taxonomic division. Taverna, Waxman, Medin, Moscoloni, and Peralta (2014, p. 214) remark that universal principles (external) and individual experiences (internal) are seemingly affected the ways how people name and categorize things into each particular group. With these two factors, three important elements are taken into consideration. These include language (how is an individual native language marked folk biological categories?), personal experience (an individual interaction in the natural environment), and culture (the belief system of the community to the world). To categorize, classify, and name objective and subjective things are based on many factors such as criteria, views, aspects, and characteristics (Ziser, 2004). Following table shows some examples of the criteria for classification.

Table 1: Factors/ Criteria underlying Naming or Categorizing Things in the World (Ziser, 2004)

No.	Category	Criteria/ Factors/ Rules	Reference (s)
1	Geography	Continent	Godfray (2002)
		Country	
		Sate or Province	
		City	
		Building	
		Floor	
		Room or Apartment	
2	Species	Kingdom	Godfray (2002) Ziser (2004)
		Phylum	
		Class	
		Order	
		Family	
		Genus	
		Species	

No.	Category	Criteria/ Factors/ Rules	Reference (s)
3	Organisms into Kingdoms	Cell Structure - Prokaryote versus Eukaryote - Cell Wall Present or Absent - Cell Wall Chemistry - Presence or Absence of other Organelles	Godfray (2002)
		Cellularity - Unicellular versus Multicellular - Level of Organization of Cells into Tissues	
		Mode of Nutrition - Heterotrophy versus Autotrophy - Photoautotroph versus Chemoautotrophy - Saprophytic versus Ingestive	

From Table 1, the criteria for grouping things to its categorization nature are variety in factors depending on the contexts and perspectives of taxonomists.

Research Methodology

This study employed the qualitative research methodology. Data were gathered from the secondary sources: textbooks, academic articles, and materials from websites. Documentary analysis was used as the method to analyze data. Details of data collection procedures and analysis are briefly explained as following.

Data collection and analysis procedures:
1. Set up the study purposes and questions
2. Scoped the concept of research answers
3. Searched for data from textbooks, academic articles, and materials from websites
4. Analyzed all collected data
5. Grouped data according to the research questions
6. Presented and discussed data according the research purposes
7. Concluded the study and discussed the study implications

These are the methodological steps of the study. Findings and discussion are provided in the next topic.

Findings and Discussion

This section provides answers for two research questions. The first research question is about the development of both folk

taxonomy and SFL taxonomy. The second one compares the differences between both taxonomic systems.

1) The Development of Folk Taxonomy

Folk taxonomy is originated from Greeks around 250 years ago. A history of taxonomy has been recalled from different sources and perspectives. For example, Guerra-Garcia, Espinosa, and Garcia-Gomez (2008) studied the development of taxonomy by using three areas of stages from alpha (analytically phase), beta (synthetic phase) to gamma taxonomic disciplines of Kapoor (1998) and Disney (2000). Raven, Berlin, and Breedlove (2009) studied the development of taxonomy by providing eight principles of folk taxonomic systems. Manktelow (2010) investigated the history of taxonomy by dividing it into two periods: prelinnaean and postlinnaean.

According to Guerra-Garcia, Espinosa, and Garcia-Gomez (2008), Kapoor (1998) and Disney (2000) provided the taxonomic disciplines which can be divided into three areas of stages, including alpha (analytically phase), beta (synthetic phase), and gamma (biological phase) taxonomies. Alpha taxonomy refers to the recognizable and describable species level. Beta taxonomy refers to the species arrangements level in a natural system of both lower and higher categories. Lastly, gamma taxonomy refers to the analysis of intraspecific variations, ecotypes, and polymorphisms. Raven, Berlin, and Breedlove (2009) describe the development of taxonomy

that as a human being, we naturally recognize things from its features in terms of similarities, differences, and circumstances. Those recognizable things have been respectively linguistically recorded. Eight common principles are set to all folk taxonomic systems:

1. Every language has a basic natural recognition to group organisms. This is due to the receptive perspective of people of each community. The group of organisms is called TAXA.

2. The group of TAXA then will be categorized into different taxonomic ethnobiological sub-categories. Five criteria based on linguistic and taxonomic perspectives include unique beginner, life form, generic, specific, varietal.

3. These five criteria are basically organized according to the exclusive hierarchy of assigned taxa in different ranks.

4. If the organisms are particularly grouped in the level of the unique beginner, it is called TAXON and possible not to be recorded formally as a linguistic expression.

5. Taxa of living things are in a few numbers which include a main portion of low rank taxa.

6. A majority of taxa forms are mostly included in the generic group rather than the living one with the finite number of 500. Some particular generic taxa for the community economy or abnormal condition are probably not included in the form of living taxa.

7. Generally, various specific taxa are quantitatively less than generic ones. They are in the groups of few members of each particular generic. The groups that have more than two members are referred to living things which are related to culture. However, if the members have more than 20, they will be named under the specific or generic group which they are belong to.

8. The living form of taxa which is in the intermediate level will be included in the generic level automatically. This level is not normal in folk taxonomies and is not labeled linguistically. It is called, covert categories.

These eight principles are the common criteria of folk taxonomic systems which are rather complicated for general people to understand. As Raven, Berlin, and Breedlove (2009) mentioned about the problems of modern taxonomy that,

> A folk taxonomic system is designed not for information retrieval, but for communicating about organisms with those who already understand the nature of the organisms and their culturally significant features are part of the active ethnobiological knowledge of most adult speakers of the language" (p. 1212).

In other words, these difficulties come from a mismatch between describers and communicators. It means the describers see the name of the organisms and will understand its characteristics immediately, but the communicators do not share the common understanding with the describers. Thus, the fundamental of communication presents in folk taxonomic systems related to a limited number of organisms (Raven, Berlin, and Breedlove, 2009).

Lastly, Manktelow (2010) investigated the history of taxonomy by dividing data into two periods: prelinnaean and postlinnaean. Linnaeus is one of the important persons who accomplished in gathering and making databases of plants and animals (Godfray, 2002). In other words, Linnaeus is regarded as the pioneer of "modern botanical and zoological taxonomy" (Manktelow, 2010, p. 2). The following table elaborates more details.

Table 2: A summary of the history of folk taxonomy in both Prelinnaean and Postlinnaean Period (Manktelow, 2010)

No.	Period	Taxonomist (s)	Field of the Expertise
Pre-Linnaean Taxonomy			
Earliest Taxonomy			
1	Around 3,000 B.C.	Shen Nung, Emperor of China (the Father of Chinese medicine)	He had tasted hundreds of herbs. He wrote a book "Divine Hasbandman's Materia Medica", which contained "365 medicines derived from minerals, plants and animals".
2	Around 1,500 B.C.	Egyptian doctors	The wall paintings of medical plants were used to be teaching equipment for giving knowledge to people with old Egypt names. Papyrus rolls, Ebers Papyrus
The Greeks and Romans (In Western scientific taxonomy)			
3	384 – 322 B.C.	Aristotle, the Greek philosopher	He was the first taxonomist who classified all living things, and some of his classification is used today such as 'vertebrates' (animals with blood) and invertebrates (animals without blood). He classified the animals with blood into 'live-bearing' and 'egg-bearing'. On the

No.	Period	Taxonomist (s)	Field of the Expertise
Pre-Linnaean Taxonomy			
			other hand, the animals without blood which nowadays used refer to insects, crustacean and testacea (molluscs), for example.
4	370 – 285 B.C.	Theophrastus, a student of Aristotle and Platon	He wrote a classification of 480 species of plants which was called 'De Historia Plantarum'. It was applied for taxonomic purposes until the Middle Ages in Europe.
5	40 – 90 A.D.	Dioscorides, a Greek physician who travelled in the Roman and Greek world to gather knowledge about medicinal plants.	He wrote a book's name was 'De Materia Medica' which contained 600 species of plants. It was employed in medicine until 16th century and reprinted for many times.
6	23 – 79 A.D.	Plinius, a soldier who involved in the Roman army and Roman state. He is supposed to be the father of Botanical Latin.	He wrote many books. One of the books which were still used in nowadays is 'Naturalis Historia. It describes many kinds of plants and uses Latin names.

No.	Period	Taxonomist (s)	Field of the Expertise
Pre-Linnaean Taxonomy			
Early taxonomists			
7	1519 – 1603	Caesalpino (Italy), who is sometimes called as the first taxonomist	He wrote the book's name was De Plantis (contain 1,500 species). His classification was based on growth habit together with fruit and seed form.
8	1541- 1631; 1560 – 1624	Two Swiss brothers Bauhin	They wrote their work's called 'Pinax Theatri Botanici' in 1623 (contain a list of 6,000 species). Their work also included 'Synonymes' of those species.
9	1627 – 1705	John Ray, the English naturalist and the pioneering entomological taxonomic work	He wrote many significant works. The most important contribution was the establishment of species as the ultimate unit of taxonomy. In 1682, he published a book's called 'Methodus Plantarum Nova' (contain 18,000 plant species). His complicated classification was based on the combination of characters which was different from the earlier taxonomists. He also worked on mammals, reptiles, birds, and fish and insects.

No.	Period	Taxonomist (s)	Field of the Expertise
Pre-Linnaean Taxonomy			
10	1656 – 1708	Joseph Pitton de Tournefort (France)	He constrctued a botanical classification that came to rule in botanical taxonomy until the time of Carl Linnaeus. He published his work's called 'Institutiones Rei Herbariae' (contain 9,000 species which were listed in 698 genera).
Linnaean Era (Modern Taxonomy)			
11	1707 – 1778	Carl Linnaeus, (Swedish botanist) the modern botanical and zoological taxonomist	He published his work's name was Species Plantarum (the global flora) in 1753 and the10th edition of 'Systema Naturae' (the global fauna) in 1758. He presented these books for both plants and animals. With his expanded knowledge through 17th and 18th century, a large number of species were found and named. Furthermore, Linnaeus introduced the sexual system of plants, an artificial classification based on the sexual parts of the flower: the stamens and pistils. Linnaeus sexual system of plants became the highest fashion also outside the scientific community.

No.	Period	Taxonomist (s)	Field of the Expertise
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No.	Period	Taxonomist (s)	Field of the Expertise
Pre-Linnaean Taxonomy			
			He attempted to order the world of taxonomy by his own way. He published many books which would transform botany and zoology into sciences, surrounded by philosophy, order and systems, disciplines of theology, and law. His work included rules for species descriptions, terminology and instruction. These works has been used until today.
Post-Linnaean Taxonomy			
Natural system emerging in France (Linnaean systematics did not work in this particular context, so there were four French scientists emerged and played important roles on biological sciences. The French scientific work, the development of anatomy, and physiology and improved optical.)			
12	1707 – 1788	Georges-Luise Leclerc de Buffon	His approach was to describe the world rather than to classify it. His theories touched upon development of species, intraspecific variety and acquired inherited characters in species, which opened up a pathway for an evolutionary theory.

No.	Period	Taxonomist (s)	Field of the Expertise
		Pre-Linnaean Taxonomy	
13	1727 – 1806	Michel Adanson	He wrote the book's name was 'Familles des Plantes' in 1763. His idea was to classify things should not emphasis on other characters but should emphasis on a great range of its own characters.
14	1748 - 1836	Antoine Laurent de Jussieu	He proposed a natural system based on many characters that came to be a foundation of modern classification. He divided the plants into acotyledons, monocotyledons and dicotyledons and established the family rank in between the ranks 'genus and 'class'.
15	1744 - 1829	Jean-Baptiste de Lamarck	He proposed an evolutionary theory including inheritance of acquired characters, named the 'Lamarckism'. This was foreboding the theory evolution presented by Charles Darwin and Alfred Russel Wallance in 1858 in London.

No.	Period	Taxonomist (s)	Field of the Expertise
		Pre-Linnaean Taxonomy	
Rules for Nomenclature (There are continuous modifications of the codes of botanical nomenclature and zoological nomenclature. Changes in the botanical nomenclature are decided by discussions and votes on open meetings at every International Botanical Congress, held every sixth year.)			
16	1778 – 1841	Augustin Pyramus de Candolle	He was one of the first attempts to create rules in botanical taxonomy.
17	1806 – 1873	Alphons de Candolle (son of Augustin Pyramus de Candolle)	He adopted the rules in his father book with 100 botanists.
18	1843 – 1907	Otto Kuntze (German botanist)	He published a controversial work which applied Candolle's laws from 1867 rigidly. He changed 1,000 generic names and 30,000 species names.
19	1811 – 1853	Hugh Edwin Strickland	He elaborated the first nomenclatural laws for zoology (the Strickland Code). He was assisted by a committee where Charles Darwin was a member, among others. The code was

No.	Period	Taxonomist (s)	Field of the Expertise
Pre-Linnaean Taxonomy			
			accepted by among British and American zoologists within three years and was modified later by a geological international congress in Bologna in 1881.
From phonetics to phylogenies The systems of plants and animals were now huge, in flowering plants approaching a quarter of a million species.			
20	1809 - 1822	Charles Darwin	Launched the evolutionary theory in 1858
21	1823 – 1913	Alfred Russel Wallance	
22	1834 – 1919	Ernst Haeckel	Two German biologists who started the construction of evolutionary trees. Haeckel established the term 'phylogeny'. However, the main part of the 20th century was dominated by extended phonetics.
23	1839 - 1878	August Wilhelm Eichler	

No.	Period	Taxonomist (s)	Field of the Expertise
Pre-Linnaean Taxonomy			
24	1841 - 1924	Eugen Warming	Masters in plant systematics, each arguing for different systems built up on many characters, uncertain parts of the system relying on personal, professional experience. I was difficult to test a systematist's theory of a suggested system.
25	1884 - 1972	John Hutchinson	
26	1910	Armen Leonovich Takhtajan	
27	1919 – 1992	Arthur J. Cronquist	
28	1920	Robert F. Thorne	
29	1932 – 1987	Rolf Dahlgren	
30	1913 – 1976	Wili Hennig	He founded the cladistics era in 1996, by stating that only similarities grouping species should be in used in classification. Hypotheses on systematics could now be tested through cladistics methods. The new method, called cladistics, was controversial and it took around 20 years before it started to become established.

According to Table 2, some previous evidences show that taxonomy has been known for 3,000 years ago. It was started in China. The purpose is basically concerned on medical knowledge.

Later on, the issues of taxonomy have been extended to language philosophy and botanical science in the Greeks and Romans periods. To classify living things and botanical species, the taxonomists try to create their own rules for categorizing living things, plants and herbs into homogenous groups (share common characters). After the period of classifying living things, botanical and herbal, the taxonomists extend their knowledge to zoological knowledge. Here is the brief history of taxonomy in general which is reviewed and summarized by Manktelow (2010).

Next topic describes about Systematic Functional Linguistics taxonomy and its development.

Taxonomy in Systematic Functional Linguistics Theory

The Systemic Functional Linguistics theory (SFL) was developed from the focus on a lexicogrammar in Halliday's studies in 1961. The theory is a part of Firthian tradition which is focused on "the outer strata of language in context" (Matthiessen, 2007, p. 766). The viewpoint of SFL is to regard a language as a resource for making meaning and a grammar is a resource for creating meaning by means of wording (Bavali & Sadighi, 2008). Language in the perspective of SFL is influenced by grammar because grammar works as an experience transformer for interpreting meaning of that particular texts by utilizing a form of categories (Halliday, 1996) and activities (Halliday, McIntosh and Strevens, 1964) of human in each

community. This is a construing process of human experience. In other words, language constitutes the processes of society and its order. The functional grammar is to lead the processes and bring the order into meaning. Experience is considered as a resource which facilities an understanding, representation, and action based on the authentic situation. It is referred to knowledge which covers the taxonomic conceptual forms, schemata, and scripts.

In terms of meaning in SFL, there are three modes of meaning, including ideational metafunction, interpersonal metafunction, and textual metafunction. The metafunction is a heart of the language evolution and the constant interaction with the environment. The ideational metafunction concerns about an experiential construing process. Language serves as "a theory of reality" and a reflective resource of the world (Halliday (1996: 7). This metafunction is also called, an experiential metafunction. Halliday and Matthiessen (2008) note that the experiential category refers to everything that is related to a construing process of the experience. The experience consists of three complexing levels, including elementary, configurational, and complex (p. 48).

Regarding the above description of the taxonomic concept in Systemic Functional Linguistics theory, some of the evidence are found to indicate that a child language development is important to learn things through meaning (Halliday & Matthiessen, 2008). For example, Painter's (1996) study shows that one of the important

technical terms which are inevitably mentioned is 'Proto-language'. It is a term to represent a process of construing experience of meaning system on naming objects through children language development. To elaborate, when children's age is around two years old, they start to make the transition from proto-language into language which is meant the process of developing the system of the mother tongue. This phenomenon is called self-construal. The naming acquiring process automatically happens in an individual child. Children, later, get into the critical step of generalizing things around them across individual acquiring process. That is to say, "naming has been generalized from individual names (proper nouns) to class names (common nouns)" (ibid: 73). Painter (1996 cited in Halliday & Matthiessen, 2008) provided an important point on the understanding of how linguistic resources are deployed for categorization in the language development. The information comes from her longitudinal case study (1996) of one child whose name is Stephen. Painter studied his language development in the age between 2.5 and 5 years old. The table below displays her study's results.

Table 3: Painter's study on Stephen's language development (Halliday & Matthiessen, 2008)

Stage	Age	Categorization	Characters/ Phenomenon of language development
1	0 - 2.5 years old	Naming individuals	As a child in this stage, his language is acquired automatically and individually according to the "instances of the visual experience" (p. 73) which is shared by a young child himself and his father or mother, later on, ascribes those instances into some general classes of experience by using a figure of being.
2	2.5 – 3.5 years old	Intersubjective focus	The general classes of experience are transferred into intersubjective focuses from a figure of being to pointing verbally as a gesture or to replace by talking about some features of material settings. This stage means Stephen imports his experience on instances into a semantic system by regarding those instances into general classes of the system. This phenomenon is a process of naming by calling particular objects. This experience leads into taxonomies.

Stage	Age	Categorization	Characters/ Phenomenon of language development
3	3.5 – 4 years old	Critical semantic mass	When meaning potential reaches into critical semantic mass, Stephen begins to construe his "own internal organization explicitly" in order to figure out how is a systemic relationship among taxonomies (p. 74).
4	4 – 5 years old	Interpersonal act of communication	This stage is to add figures for categorization from causal evidence. The construal process refers to something that is commonly shared, negotiated, and argued. This stage is regarded as the semantic resources preparing for educational learning.

From Table 3, it shows the child language development stages start from the naming individual stage to the interpersonal act of communication. These are the process as a child construes their experience by meaning and learning how to recognize things. This is a particular case study of a child, Stephen. However, it reflects some important evidences for scholars in the field to see the real phenomenon of the language development in a child and what the role of language in taxonomy is. Halliday and Mettheisson (2008: 82) summarized how human beings to construe their experience in the ontogenetic perspective as following:

1) Initially, the child construes his/her experience from the event that gets involved or choose to perceive as a common view among participants. Then the process leads into the constitution of meaning. The experience of the child will be dialogically shared, validated, and built with other groups of meaning.

2) The former experiences are based on the child's perception. Those experiences will be revealed in the semantic system and further develop through discourse. After construing from the dialogical discourse, the experience will be extended to the abstract categories. This is a construal process.

3) Regarding the network of ideational resources, different kinds of relations in the categories which are taken from global and local bases will be brought into the construal process in terms of taxonomic elaboration, meronymic extension, and transcategorization.

4) The network is defined as a multidimensional and elastic space. Its position is not particular fixed, but it is clearly bounded regions with core areas and more peripheral areas that influence others.

5) The ideational resources for extra - linguistic experience are construed as semogenic resources. It is built up itself with different kinds of relations. This affects to the occurring process of critical semantic mass and following up with internal construing process of new categories in the ideational base.

2. Comparison between Folk Taxonomy and Systemic Functional Linguistics Taxonomy

According to the concepts of folk and SFL taxonomies, there are some common purposes to name and categorize things in the world. The similar purposes are to make common understanding of both objective and subjective things on the earth, to share common senses of the names created among various groups of people, and to avoid confusion in using the names of that particular things. However, there are some different principles of naming between folk and SFL taxonomies as demonstrated in the following table.

Table 4 A Summary of the Differences between Folk and Systemic Functional Linguistics Taxonomies

No.	Folk Taxonomy	Systemic Functional Linguistics Taxonomy
1	Started 3,000 years ago with plant and herb experiments for medical purposes, language philosophy, and botanical science in the Greeks and Romans by creating rules for categorizing living things, plants, and herbs into homogenous groups and extend to zoological knowledge	Started in 1960s with the notion of construing experience in order to get knowledge of meaning, language is supposed to store, exchange, and construe experience of meaning and come up to be experiential categories and taxonomic forms in daily language use. Experience is regarded as a resource for understanding, representing, and acting for categories of a language development.
2	Concerning on universal principles (external factors) and individual experience (internal factors) including language, natural world, and culture	Concerning on three modes of meaning: ideational metafunciton, interpersonal metafunction, and textual metafunction. The ideational metafunction is also called as an experimental metafunction and it is supposed to be a main concept of categorizing and naming processes in the language development

No.	Folk Taxonomy	Systemic Functional Linguistics Taxonomy
3	Rules for classifying consist of five criteria, including the maximum steps in delicacy runs from kingdom (unique beginner) - life form - basic (generic) level - life form - basic (generic) level - specific level - and varietal level.	Rules for classifying consist of three experiential orders of complexity: elementary (a single element) – configurational (configuration of elements i.e. figure) – complex (a complex of figures i.e. sequence).
4	The move from folk taxonomies towards scientific ones involves both delicacy increasing steps and criteria changing for classification.	Taxonomies are construed from four steps of language development: naming individuals – intersubjective focus – critical semantic mass – interpersonal act of communication.

According to the Table 4, the notions of naming things in folk and SFL taxonomies have different focuses and features. Folk taxonomies are taken from doing some experiments of plants and herbs in order to create the rules of naming and categorizing them into groups. Later, this knowledge is extended to animal study. Naming and categorizing living things in folk taxonomy is also related to individual experience, language, and culture. Those things are categorized into different kingdoms and levels depending on their complexities. On the other hand, taxonomy in Systemic Functional

Linguistics theory concerning on how human construes language and gets meaning for communication by studying the development of language of a child from the step of infant to adult. To name and categorize things in this taxonomic type, the construing process must be taken from experience, observation of daily phenomena, and knowledge of meaning because language is supposed to be the tool for naming and categorizing things and it is learned through semantic functions in language use.

Conclusion and Implications

This study recalled the development of folk and Systemic Functional Linguistics taxonomies and studied the similarities and differences between them. In terms of similarities, these two taxonomies aim to name and categorize both subjective and objective things in order to understand and share the common meaning among the communicators. In terms of differences, these two taxonomies are originated and developed in different ways. Folk taxonomy was developed 3,000 years ago by experimenting plants and herbs. Later on, it was extended to zoological areas. Those experiments lead to the naming and categorizing living things into kingdoms and levels which depended on their complexities in experience, expertise, language, and culture. In contrast, Systemic Functional Linguistics taxonomy based on their naming and categorizing things on the development of language in human and

meaning in language use. Although, these two types of taxonomies are different in terms of their principles in naming and categorizing, both are useful and important for human being. Learning how to name things correctly is beneficial for people to understand each other, enhance effective communication, and avoid confusion with others.

The implications of the study are varied, depending on the use for what situation and context. For example, the findings can be primarily applied as the resources for training and learning about taxonomy in the general and linguistic perspectives. The findings also can be implemented as the secondary resources for scholars in the field to review and work on their projects. At the same time, the findings of the study will widen the views of scholars to see some opportunity to work on some related and innovative issues to develop the theories in the future.

References

Bavali, M., & Sadighi, F. (2008). Chomsky's Universal Grammar and Halliday's Systemic Functional Linguistics: An Appraisal and a Compromise. *Pan-Pacific Association of Applied Linguistics, 12* (1), 11 – 28.

Godfray, H. C. J. (2002). Challenges for taxonomy. *Nature, 417*, 17 – 19.

Guerra-Garcia, J. M., Espinosa, F., & Garcia-Gomez, J. C. (2008). Trends in Taxonomy today: an overview about the main topics in Taxonomy. *Zool.baetica, 19*, 15 – 49.

Halliday, M. A. K. (1996). Functional Descriptions: Theory in Practice. In Hasan, R., Cloran, C., & Butt, D. G. (Eds.), *On Grammar and Grammatics* (pp. 1 - 38). Amsterdam & Philadelphia: John Benjamins.

Halliday, M. A. K., & Matthiessen, M. I. M. (2008). *Construing Experience through Meaning*. China: Continuum International Publishing Group.

Halliday, M. A. K., McIntosh, A., & Sevens, P. (1964). *The Linguistic Sciences and Language Teaching*. London: Longmans.

Knapp, S., Rainbow, P. S., Smith, A. B., & Taylor, P.D. (2002). Taxonomy needs evolution, not revolution. *Nature, 419*, 558 – 560.

Manktelow, M. (2010). History of Taxonomy (Course syllabus). Retrieved from http://atbi.eu/summerschool/files/summerschool/Manktelow_Syllabus.pdf

Mathhiessen, M. I. M. (2007). Lexicogrammar in systemic functional linguistics: descriptive and theoretical developments in the 'IFG' tradition since the 1970s. In Hasan, R., Matthiessen, C. M. I. M., & Webster, J. (Eds.). *Continuing Discourse on Language: A Functional Perspective Volume 2*. London: Equinox.

Raven, P. H., Berlin, B., & Breedlove, D.E. (2009). The Origins of Taxonomy. *Science, New Series, 174* (4015), 1210 – 1213.

Reeb, J. E. (1997). *Scientific Classification of Trees: An Introduction for Wood Workers*. Cooperative Extension Service: University of Kentucky, College of Agriculture.

Taverna, A. S., Waxman, S. R., Medin, D., Moscoloni, N., & Peralta, O.A. (2014). Naming the Living Things: Linguistics, Experiential and Cultural Factors in Wichi and Spanish Speaking Children. *Journal of Cognition and Culture, 14*, 213 – 233.

Winston, J. (1999). *Describing Species: practical taxonomic procedure for biologists*. New York: Columbia University Press. Retrieved from http://eol.org/info/467

Ziser Lecture Notes. (2004). Taxonomy and Classification. Retrieved from http://www.austincc.edu/sziser/Biol%201413/ LectureNotes/lnexaml/taxonomyClassification.pdf