

**TECHNICAL TERMS USED IN SCIENTIFIC WRITING:  
A MORPHOLOGICAL AND SEMANTIC STUDY**

**Thesis**

Presented to the State Islamic University of Malang  
in the partial fulfillment of the requirements  
for the degree of Sarjana Sastra (S.S.)

By

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**ENGLISH LANGUAGE AND LETTERS DEPARTMENT  
FACULTY of CULTURE AND HUMANITY  
STATE ISLAMIC UNIVERSITY of MALANG  
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**2007**

## APPROVAL SHEET

This is to certify that Sarjana's thesis of *Technical Terms Used in Scientific Writing: A Morphological and Semantic Study (03320008)* has been approved by the advisor for further approval by the board of examiners.

Malang, October 4, 2007

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## **MOTTO**

***DENGAN BAHASA KITA ARUNGI DUNIA  
DAN KITA SELAMI BERBAGAI ILMU PENGETAHUAN***

*(Askuri, 2003)*

## **DEDICATION**

*I dedicate this thesis to :*

*My beloved brother, Ahmad Kholid Mawardi (Alm), you with your own destiny has give me much of inspirations, may Allah always gives you the best, Amin.....*

*My beloved Mother Muttasifah Mustofa and Father Syamsul Huda Nur S.Ag., M.Sc, the great thing that yo've gave to me is your patient in guiding me so i can be just like now. Hopefully you can be proud with me.*

*My Lovely Sister Siti Zulaikhah S. E., and Brother Muhammad Subhan S. Si, who has gave me support which is always be my inspiration to be the best of me. And also to all my big family, thankyou for your attention and careness to me as your youngest brother.*

*All of my teachers in TK Muslimat V, MINU Sumberpasir, SMP Darul Fikri, MTs. Diponegoro, MAN Tambakberas, UIN Malang, yo've be my part of life, thankyou so much for the knowledges.*

*Ade' Isna, thankyou for everything you've done for me, and thankyou for the happiness and laugh, also the sadness and cry, it has completed my life. You are my only past, present, and hopefully becoming my bright Future. Just be the best of you honey.*

*To all of my friends, especially Gus Idham, thankyou for the wise, you always be your self; Gus Showir, thankyou for the time, you always ready to help me; Angus, never be my black list friend, thankyou for the suggestions. Bu Hajjah, Ina', Yuli,*

*And also to all of English Letter Department students Chapter 2003, IPNU/IPPNU Chapter UIN Malang, HIMMABA Chapter Malang, IKAI Community, WK Residences and finally belongs to "Gank Unkrex PKLI DISPARTA SBY", thankyou for the enjoyment given to me as your friend..*

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Praise to Allah, the Lord of the universe, the beneficent, the merciful who has give the inspirations and ideas to the writer, so that he can finish this study successfully. Sholawat and Salam always be praised to Prophet Muhamad SAW who has shown us the truth of Islam as our religion. This study is intended to fulfill the requirement for achieving the degree of Sarjana Sastra in English Language and Letters Faculty at Islamic State University (UIN) of Malang.

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3. All of the lecturers who have guided him during the period of his study in Islamic State University of Malang (UIN Malang)
4. His beloved Father and Mother for their endless great love, care, pray and who have given motivation both materials and spirituals for her study.
5. His beloved friends who always give him love, motivation and support.

The writer realizes that this study is not perfect. Therefore he hopes some criticism and suggestion.

Malang, October 8, 2007

(The Writer)

## ABSTRACT

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**Key words: The word-formation Processes in technical term, Semantic change, Scientific writing**

Scientific writing is a media of communication between the readers and the writer, this has a special terms that are not all people able to interpret the meaning of the term. In fact, the form of the technical term is almost the same with form of the word in the ordinary language, but the meaning contains that make it special. The focus of interest of this study is what word formation process and the mostly used in the technical terms used in scientific writing and the meaning change that happened on it.

The objective of this research is to describe the word formation process and identify which type of word formation process that is mostly used in the technical terms of the scientific writing and also to identify the meaning change (Semantic study) of the technical terms in scientific writing. This research is designed by using descriptive qualitative method. They are analyzed inductively through the observation done by the researcher himself. The data are collected from Scientific Writing under the topic according to the studied program at UIN Malang.

Research instruments used to get the data is the researcher himself. It is the suitable instrument because the data is available in printed materials. The analysis of the data is presenting the data, include the scientific writing in brief and the gathered words, developing table of the result. And the last is interpreting the result in the data interpretation.

As the result, the researcher finds that the main findings of this study include first of all, the word formation is mostly used in the technical terms used in scientific writing, are: Borrowing, Compounding, Derivation, Multiple process, Acronym and Stem word. And the last, the type of meaning change of the technical term is Extension or Generalization; a lexeme which widens its meaning.

Since this study only discusses the word formation process and what mostly used and also the meaning change of the technical terms, it will be interesting to study other phenomenon of Morphology and Semantic. Finally, the researcher suggest to the next researchers to study the other aspect in order to enrich the understanding about word-formation and semantic.



## TABLE OF CONTENTS

Cover .....	i
Approval Sheet .....	ii
Legitimation Sheet .....	iii
Motto .....	iv
Dedication .....	v
Acknowledgements .....	vi
Abstract .....	vii
Table of content .....	viii

### CHAPTER I

#### INTRODUCTION

1.1 Background of Study .....	1
1.2 Problem Statement .....	4
1.3 Research Objective .....	4
1.4 Significance of the Study .....	4
1.5 Operational Definitions.....	5

### CHAPTER II

#### REVIEW OF THE RELATED LITERATURE

2.1 Linguistics .....	7
2.2 Morphology .....	8
2.3 Word Formation Processes.....	9
2.4 Semantic .....	13
2.5 Semantic Change .....	14
2.6 Previous Study .....	15
2.7 Review of Theoretical Work on Word-Formation Processes: State of the Arts .....	17

### CHAPTER III

#### RESEARCH METHOD

3.1 Research Design .....	20
3.2 Data Sources .....	20
3.3 Research Instrument .....	22
3.4 Data Analysis .....	22

### CHAPTER IV

#### FINDING AND DISCUSSION

4.1 Data Presentation .....	24
4.1.1. The Scientific Writing in Brief .....	24
4.1.2. The Technical Terms used in Scientific Writing .....	26
4.2 The Data Analysis .....	28
4.2.1. Single Word Terms .....	28
4.2.2. Phrasal Terms .....	55
4.3 Data Result of Analysis .....	66
4.3.1. The Word Formation Process of the Terms .....	66
4.3.2. Mostly Used Word Formation .....	73

4.3.3. The New Meaning of the Technical Terms .....	75
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**CHAPTER V**

**CONCLUSION AND SUGGESTION**

5.1 Conclusion .....	77
5.2 Suggestion .....	78

Bibliography .....	
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Appendixes .....	
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## CHAPTER I

### INTRODUCTION

This introduction presents and discusses about the Background of the study, Problem statements, Research objectives, Scope and limitation of the study, Significance of the study and Operational Definition.

#### **1.1 . Background of the study**

Human being do not live in the objective world alone, nor alone in the world of social activity ar ordinarily understood, but are very much at the mercy of the particular language which has become the medium of expression for their society.<sup>1</sup> The latter word lexically means a community of people living in a particular region and having shared customs, laws, and organization.<sup>2</sup> And according to Mac Iver J.P. Gillin, Society is a community of people which having a continous interaction due to a specific tradition systems, and also tied up by a feeling of having similar identity.<sup>3</sup> Those statement then give an understanding that society is a group of people which has similar characteristics and live goals and tied up in a specific tradition system.

People belong to certain group because they had certain purposes in their lives and they think this can be reached if only by share their ideas and powers in order to reach the personal goals in a community. That is why Sociologists state that people is social creature which has desire to

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<sup>1</sup> Sapir in Wardhaught, An introduction to Sociolinguistics, (new York: Basil Blackwell) 1986, P:212

<sup>2</sup> Hornby, A.S, Oxford Advanced Learner's Dictionary of Current English, (Oxford: Oxford University Press) 1995, P:1128

<sup>3</sup> Gillin in Dhohiri and Friends, Panduan Belajar Sosiologi (Jakarta: Yudhistira) 1998, P:73

communicated, associated and having relationship with another person, this is because they need it in their live.<sup>4</sup> This then called as a social interaction.

The differences in the purposes and live goals make them tried to associated with another whose have the similarity in the purposes and live goals, this then make them belonging in to certain community. The social interaction in this special community can be done while the members having a deals in using the language. Language grows and exist in society, that is why Trudgil and many other linguists stated that language is social phenomenon so that it is closely tied up with social structure and value system of society.

The above statements is about every society uses the language in the way it's social structure and value system in daily communication. Along society will use it's language differently from another society which has it's own characteristics. This matter can be seen if we paid close attention to this example, Just like in the scientific community, the language that used on it is absolutely different from another community, especially in the meaning.as a study case, the word table. In ordinary community this means a furniture, while in the scientific community this means an arragement of numbers, words or other item in columns and lines to show relation in brief<sup>5</sup>.

Wardhaught state that Language is both an individual possession and social possession<sup>6</sup>. The statement above shows that individual or society has a possession to their own language that differenciate them from another.

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<sup>4</sup> Maryati, Kun; Suryawati, Juju, Sosiologi untuk SMA dan MA, (Jakarta: Erlangga) 2001, P: 55

<sup>5</sup> The World Book Dictionary (USA, World Book Inc) 2005.

<sup>6</sup> Wardhaught, An introduction to Sociolinguistics, (new York: Basil Blackwell) 1986, P:113

Just like science, it has its own terms that only used in their community. The terms that used in scientific fields are differ with the usual people have, mainly in the meaning. The specific meaning that brought in these specific terms purposed to get a maximum understanding with a minimum explanation, so there is an additional needs for another society members to understand those special terms.

For various reasons the language of the sciences sounds different from the day-to-day language. In line with that, the big problem is how people on general status or different community could be understand about those terms. one thing which makes it difficult for the layman to understand a professionally trained person in the language he uses. He has acquired a technical language that makes it difficult for the nonprofessional to interpret.<sup>7</sup>

Due to this fact, giving a much attention to the impotence of knowing the morphological process and the semantic contents of the scientific language (technical terms) that used in the scientific writing is the main reasons for the writer to write a thesis entitled “TECHNICAL TERMS USED IN SCIENTIFIC WRITING: A MORPHOLOGICAL AND SEMANTIC STUDY.” Practically, this research is focusing to analyze the technical terms that used in scientific writing through the morphological and semantic approach. Morphology can answer the problems about the way how is the words (here is the technical terms) are formed . Then, the writer

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<sup>7</sup> Arthur, Crabtree, You and Law, (New York: Holt Rinehart and Winston Inc) 1963, P: 5

combine it with the semantic theories to know a deep understanding about the new meaning that occurs as the effect of the words formation process.

## **1.2 Problem statements**

The problems of this study is formulated as follows:

- 1.2.1. What word formation processes are used in the technical terms found in the scientific writing?
- 1.2.2. What word formation processes are mostly happened in creating the terms?
- 1.2.3. What new meanings are created after morphological processes?

## **1.3 Research Objectives**

The Objectives of this study are defined as the answers to the problem of the study. This study is intends to present:

- 1.3.1. The description of the word formation processes are used in the technical terms found in the scientific writing.
- 1.3.2. The description of the word formation processes are mostly happened in creating the terms.
- 1.3.3. The description of the new meaning are created after the morphological processes.

## **1.4 Significance of the study**

However, the English scientific writing's readers need to have a special method in understanding the morphological process and the semantic contents of the technical terms found in scientific writing because from the technical terms are known various knowledge in various

subjects including subjects which concern with the development of a language in the scientific writing.

Considering the above facts, the writer is encourages to writes a thesis which studies about the technical terms used in the scientific writing. This study is hoped to give a clearer picture about Technical terms used in the scientific writing that might be useful for the readers of the scientific writing and the readers of this thesis as a practical guidance to be used in understanding the technical terms used in scientific writing, especially to student who will write the thesis, because thesis also can be called as a scientific writing. The writer also hopes that this thesis will be useful as a practical guidance for the readers of scientific writing as their interest.

## **1.5 Operational Definitions**

In order to avoid misunderstanding about the terms used in this thesis, it is important for the writer to give an operational defintion as follows;

### **1.5.1. Word Formation process.**

Word formation process is the process of creating a word that done by some body, in this study is defined as the writer of the scientific writing to select and use specific writing.

### **1.5.2. Technical term.**

Technical term is a specific vocabularies that used in a specific activity,i.e. sciencetific community which also has a specific meaning.

In that way, the thesis entitled “Technical Terms Used in Scientific Writing: A Morphological and Semantic Study” is an investigation in to the word formation process and the meanings on the technical terms ordinarily used in scientific writing and its kind



## CHAPTER II

### REVIEW OF THE RELATED LITERATURE

This chapter discusses the literature that relates to this study. They include Language, Linguistics, Morphology, word formation process (that involve coinage, borrowing, compounding, blending, clipping, backformation, conversion, acronym , derivation, Prefixes and Suffixes, Affixation, Infixes and Multiple Process), semantics, kind of meaning (that involve Lexical meaning, grammatical meaning, descriptive meaning, contextual meaning, expressive meaning and social meaning).

#### 2.1. Linguistics

A science which studies language is called Linguistics. Linguistics is the science which attempts to understand language from the point of view of its internal structure.<sup>8</sup>

In the same subject, R.H. Robins states that general linguistics is the study of language. As with other branches of knowledge and scientific study, linguistics must be studied in two ways: in relation to other sciences outside it self, and in the different branches within itself<sup>9</sup>.

According to the definition about linguistics above, it can be understood that the goals of Linguistics is to describe language and to explain the unconscious knowledge of all speakers have of their language. we also know that linguistics studies about human language and endeavours to describe the language into the point of view of the structure.

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<sup>8</sup> Ibid, An Introduction to the..... 1981, P: 2

<sup>9</sup> Robins in Nasr, T. Raja, The Essential of Linguistics Science, (Lebanon, Longman) 1985, P: 3

## 2.2. Morphology

The term “morphology” was originally used in Biology, but since the mid nineteenth century, it has also used to describe that type of investigation which analyzes all basic elements of language.

E. Nida says that morphology is the study of morphemes and their arrangements in forming words. Words are conveniently defined as minimal free forms, i.e. the smallest units that may be spoken alone; they may consist of roots such as boy, girl and play. Such words contain more than one unit, for they can be broken down into constituent parts, such as boys, girlish and playing. Those word may be called constructed words because of being constructed of more than one element. The first constituent in each is called stem, and the second is bound form.<sup>10</sup>

Mathews (1974: 3) says that morphology is the branch of linguistics which is concerned with the forms of words in different uses and constructions.<sup>11</sup> Another linguist, Stageberg, in his book “An Introductory English Grammar” (1981: 85) says that morphology is the study of internal structure of words. From the statements above, the writer conclude that morphology is a study about the science of word formation.

## 2.3. Word formation processes

One of the ways to approach the problems and the question of the study is through word formation. A very important means of word formation involves building up complex words from morpheme and affixes. There are

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<sup>10</sup> Nida, E, Morphology; Descriptive Analysis of Words, (Michigan, The University of Michigan Press) 1982, P: 1

<sup>11</sup> Mathews, Morphology: An Introduction to the Theory of Word- Structure, (1974, P: 3)

many kind of word formations that can be found in the work of many linguists, they are:

### **2.3.1. Coinage**

That is the invention of totally new terms, for examples, aspirin, nylon, kodak, xerox or aqua which are originally as invented trade names and then which have quickly become everyday word. This can be concluded by the writer that coinage is the creation of totally words.<sup>12</sup>

### **2.3.2 Borrowing**

That is the taking over of words from other language. Throughout its history, English has adopted a vast number of loan-words from other languages, including alcohol (Arabic), boss (Dutch), piano (Italian), yogurt (Turkish) and tycoon (Japanese).

### **2.3.3. Compounding**

That is a joining of two separate words to produce a single form, for example: fingerprint (finger + print), textbook (text + book), blackboard (black + board),etc.

### **2.3.4. Blending**

Is the combination of two separate forms to produce a single new term, typically accomplished by taking only the beginning of one word and joining in to the end of the other word. For example: the term transistor (transfer + resistor), smog (smoke + fog) and motel (motor + hotel).

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<sup>12</sup> George, Yule, *The study of Language:An Introduction* (Cambridge:University Press) 1985, Page:55

### **2.3.5. Back Formation**

Back formation is known as a very specialized type of reduction process. Typically, a word of one type (usually a noun) is reduced to form another word of a different type (usually verb). The noun television and the verb televise created from it. Other examples are donate (from donation), emote (from emotion), and edit (from edition). Thomson says that blends are words created by combining parts of existing words.<sup>13</sup>

### **2.3.6. Clipping**

It occurs by cutting the beginning or the end of a word or both, leaving a part to stand for the whole, for instance: exam from the word “examination”, wig from “periwig”, flu from “influenza”, bus “omnibus”.<sup>14</sup>

### **2.3.7. Conversion**

It is considered to a change in the function of a word, for example a noun comes to be used as a verb (without any reduction). This common process also known as category change and functional shift. The conversion can involve verb becoming nouns, with guess, must and spy as the source of a , a must and a spy. Or adjective, such as dirty, empty, total, crazy, and nasty, can become the verbs to dirty, to empty, to total, or the nouns a crazy and a nast.

### **2.3.8. Acronyms**

George Yule explained that some words are formed from the initial letters of a section of other words, then he called it as acronym. These words are

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<sup>13</sup> Thomson, Wadsworth, *Language Its Structure* (USA:Edward Firegan)2004, page: 55

<sup>14</sup> George, Yule, *The study of ...* Page:55

formed by taking the initials or beginning segments of a succession of words. Thus, UNO is acronym for United Nation Organization, UIN for Universitas Islam Negeri, RADAR for Radio Detection And Ragging, and LASER for Light Amplication by Stimulated Emission of Radiation.

### **2.3.9. Derivation**

It is the forming of new words by combining the derivational affixes with the existing word. A few examples are the elements un-, mis-, pre-, -less, -ish, -ness which appear in word like unhappy, misunderstanding, prejudice, joyful, careless, boyish, terrorism and sadness.

### **2.3.10. Prefixes and Suffixes**

Prefixes are some affixes that have to be added to the beginning of a word. For example: /un-/+”happy” becomes “unhappy”, and suffixes are some affixes that are added to the end of the words, the suffix/ness/+ “happy” becomes “happines”. All English words formed by this derivational process use either prefixes or suffixes or both, “disrespectful” has a prefix and a suffix and “foolishness has two suffixes.

### **2.3.11. Affixation**

It is the addition of bound forms to stems. It is the most common morphological process; bound forms are elements that never occur alone. Adding morphemes to an existing word is a common way of creating new words.<sup>15</sup>

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<sup>15</sup> Wadsworth ,Thomson, Language Its... page: 55

### **2.3.12. Infixes**

There is a third type of affix, not only normally to be found in English; but fairly common in some other languages. Infixes is an affix which is incorporated inside another word. For example: a language spoken in South East Asia (These examples are taken from Merrifield et al (1962) ):

(“to drill”) see ---srnee (“a drill”) and

(“to chisel”) toh---trnoh (“a chisel”)

### **2.3.13. Multiple Processes**

Multiple processes are the operation more than one process at work in the creation of a particular word, such as in the sentence, “the problems with the project have snowballed” the final can be noted as an example of compounding (snow+ball), which has then undergo other process of conversion (noun to verb).

### **2.4. Semantics**

In linguistics, semantics generally is related to the meaning that is applied well in to so many fields of study. So that, the word “meaning” itself becomes ambiguous and controversial term on language. Of course, it is difficult to clarify the meaning of words without knowledge or experience due to the significant of meaning.

Fromkin in his book “An Introduction to Language” states that semantics is the study of words, phrases and sentences. He also says that

semantics concern with the study of word and morpheme meanings, as well as the study of rules for combining meaning.<sup>16</sup>

According to the Dictionary of Education, semantics is the science of the changes and development in the meaning of words.

As stated by Palmer, semantics is the technical terms used to refer to the study of meaning. <sup>17</sup>

By taking these three consideration together, it seems reasonable to conclude that semantics is the branch of linguistics that deals with the meaning. And meaning are ideas or concepts of the hearer by embodying them in the forms of one language or another.

Then the writer continue to use the term “meaning” throughout this thesis by concentrating upon certain kind of meaning which are commonly taken to be a particular importance in linguistics as stated by Lyons in his book “Language and Linguistics” (1984: 139-146). They are:

#### **2. 4. 1. Lexical Meaning**

It characterizes the meaning of a word which is in isolation based on the dictionary.

#### **2. 4. 2. Grammatical Meaning**

This kind of meaning is used in word arrangement in the sentence.

#### **2. 4. 3. Descriptive Meaning**

It identifies the descriptive meaning of an utterance with the proposition that is asserted in statements and may be presented, though is not asserted in other speech-acts, notably in questions.

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<sup>16</sup> Fromkin, Victoria, *An Introduction to Language* (Ortanda Florida, Hacourt)1978 Page:163-164

<sup>17</sup> Palmer, *Semantics*,1991 Page: 1

#### **2. 4. 4. Contextual Meaning**

Is the meaning of words in particular situations and certainly in different kind of context.

#### **2. 4. 5. Expressive Meaning**

It relates to everything that falls within the scope of “self-expression” has been for particular purposes in various ways, for instance in revealing ideas, feeling, emotion or attitude of poems.

#### **2. 4. 6. Social Meaning**

This has to do with the use of language to establish and maintain social roles and social relations. Simply, it is concerning to the meaning used in society.

### **2.5. Semantic Change**

Everyone knows that words can change their meaning. But some strongly disapprove with this change, and some other welcome with it and are able to talk about it. However, semantic change is a fact of life. Linguists have distinguished several kind of semantic change. Four particularly important categories are proposed by David Crystal, those are 18:

#### **2.5.1. Extension or Generalization.**

A lexeme widens its meaning. Numerous examples of this process have occurred in the religious field. such office, doctrine, novice, and many other terms have taken on a more general, secular range of meaning.

#### **2.5.2. Narrowing or Specialization**

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<sup>18</sup> David Crystal, The Cambridge Encyclopedia of The English Language (NYC, Cambridge University Press) 1995, P: 138



A lexeme become more spezialed I meaning. Engine was formerly used in general sense of mechanical contrivance, but since the industrial revolution it has come to mean mechanical source of power. This also might be happened in the economics terms.

### **2.5.3. Amelioration**

A lexeme develops a positive sense of approval. i.e: lean no longer bring to emaciation but athleticism and good looks.

### **2.5.4. Pejoration or deterioration**

a lexeme develops a negative sense of disapproval. i.e: Middle English Villein neutrally described a serf, whereas Modern English Villain is by no means neutral.

## **2.6. Previous Study**

In this thesis, the writer would like to express that it is necessary to review how far the Technical Terms have been reserched before. After searching and reading many thesises, especially in the library of UIN Malang and STIBA Malang, the writer can conclude that the word formation and the semantics study of the Technical Terms ordinarily used in the Scientifis writing has not been discussed yet. Another differencess of this study from another is the object of this study, that is the technical terms used in scientific writing, that will be very usefull for anther people to understand the technical terms widely. That's why the writer was so interested in doing this research.

But there are also some researchers that researching some topic throught the Morphology and semantics theories. First is Anna Kristiana

(1998) with her thesis entitled “A Semantic Study on English Terms Used in Domestic and International Flight Ticket”. She discussed the lexical and contextual meaning of the terms in the form of single word and phrases. She found that some of the ticketing terms are also used in domestic and international flight, for instance; boarding pass, baggage tag, code cooking, confirmed reservation, infant, child, etc. she also found that there are abbreviation used in domestic and international flight ticket, they are “Action Code (AC)”, “Estimated Time of Arrival (ETA)”, “Unaccompanied Monor (UM)”, etc.

The second is Yuni Susilowati (2001) with her thesis entitled “A Study on Word Formation Processes and Semantics of English Terms used in Guiding Technique”. She also discussed the lexical and contextual meaning of the English terms in the Guiding Technique in the terms of single word and phrasal word, in addition, she also discussed the word formation process in those terms. She found that some of the English Terms used in guiding technique are have the same meaning, contextually or lexically, but most of them carry their own meanings. She also found that the word formation process that mostly involve in the single-word term is derivation, borrowing, clipping and coinage, while the word formation processes in the phrasal terms is compounding.

From those previous study, this then known that this thesis is differ with another because the object of the study is a very interesting to be understood, especially for the people who turn in to scientific field and the are no other research that have been done this research.

## 2.8. Review of Theoretical Work on Word-Formation Processes: State of The Arts

This part is orderly to make a refresh to our mind about morphology. In this way, the writer make a review of theoretical work about morphology o the word formation process, this presented by the writer in tabulated form as follows:

No	Author	Title	Types of word-formation
01.	Henry Bradley	Word-making in English,1965	Composition, derivation, root creation
02.	Bolinger,Dwight and Sears,Donald A	Aspects of language,1981	Compounding, derivation, invention, acronym, reduplication, inversion and zero-derivation
03.	Brinton,J.Laurel	The structure of modern English: A linguistic Introduction:2000	Derivation, reduplication, conversion or functional shift,compounds, Blends, Back Formation, Shortening,Clipping and Root creation
04.	Fromkin, Victoria and Rodman, Robert	An introduction to language,1983	Derivation, word coinage, compound, acronyms, blends, back-formations,abbrreviations, inflection,exceptions and suppletions
05.	George Yule	The study of language: An introduction,1985	Blending, clipping, backformation,compounding,coinage, borrowing,

			conversion,acronyms,derivation, prefixes and suffixes, infixes, multiple processes.
06.	Ingo Plag	Word Formation in English,2003	Compound, prefixes and suffixes, affixation, clipping, conversion, inflection, derivation, back-formation,analogy, multiple affixation, parasynthetic formations
07.	Edward Firegan	Language its structure, 2004	Affixes, Reduplication, compounds,shortening, Acronyms, initialism, blends, back-formation, conversion, semantic shift, borrowed words and inventing words
08.	Ingo Plag	Word Formation in English, 2003	Compound, prefixes and suffixes, affixation, clipping, conversion, inflection, derivation, back formation, analogy, multiple affixation, parasynthetic formations.
09.	Thomson Wadsworth	Language its structure, 2004	Affixes, Reduplication, compounds, shortening, acronyms, initialism, blends, back formation, conversion, semantic shift, borrowed word and inventing word.
10.	David Crystal	The Cambridge	Prefixation, Suffixation, Conversion,

		Encyclopedia of English Language, 1995	Compounding, Reduplication, Clippings, Acronyms, Blends.
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## **CHAPTER III**

### **RESEARCH METHODS**

Research methods are meant as a framework and are an important way to comprehend the object of the research. In this chapter, the writer would like to report some data in connection with the conducted research and wants to explain the system how he wrote his thesis systematically. There are several steps in getting the materials of this study, namely research design, data sources and gathering, research instrument and data analysis.

#### **3.1. Research Design**

The writer always believes that since there is no deal with calculating and numbers, a research is called as the qualitative research to answer the formulated problem. But in this research, even it is a linguistic research, the writer also believes that there is also need a calculation and numbers, i.e. in deciding which term must be analyzed first is the term that mostly used in scientific writing. Because of this reason, this research is called as an interpretive research. This also called as a descriptive research because this research is proposed to describing the data, the technical terms in scientific writing, through the morphological and semantic approach. So the proper research method for this research is Descriptive-interpretive research.

#### **3.2. Data Sources and Gathering**

There are many data sources that can be found by the writer in the Journals or dissertation that absolutely must be written in the form of scientific writing. The writer will only take some titles of scientific writing

from those sources as sample data, Then the writer directly select the technical terms in each sample data. The sources are:

1. A working paper under the title “Globalisation and Education, what do the trade, investment and migration literatures tell us? , written by Dirk Willem te Velde on 2005.
2. A working paper under the title “language in science”, written by M.S. Thirumalai, P.Hd. on 2003.
3. A working paper under the title “Reconsiliation of knowledge-application in automated database design diagnosing” written by Shahrul Azman mohd. Noah and Micahel Williams on 2001.
4. A dissertation under the title “Reinforcement learning and it’s application to control”, written by Vijay Kumar Gullapalli on 1992.
5. A working paper under the title “A simpler Approach to Intregation and the Fubini Theorem”, written by H. S. Bear and Dale Myers on 2005.
6. A working paper under the title “Lexically-Based Language Teaching: Metaphor in English for Specific Purposes”, written by Siusana Kweldju on 2006.
7. A research article under the title “Combined Optical Trapping and Single-Molecule Fluorescence”, written by Mathew J. Lang, Polly M. Fordyce and Steven M. Block on 2003.

The principle of sampling used in this research is actually the theoretical one. It means that the researcher in deciding studied cases is

guided by the theoretical interest. The focus of interest of the study is to discover the word formation process used in technical terms of scientific writing. That is why the researcher study the cases one by one so that he reaches a set of condition in which there is no a new type of word formation process. Thus, the researcher stop the process of adding new cases if the activities does not add new type of word formation process.

### **3.3 Research Instrument**

The instrument used in conducting this research is human instrument; it is the writer himself. It is because the writer will spend a lot of time to read a number of scientific writings and also doing all of the analysing process.

### **3.4 Data Analysis**

After obtaining the data, the researcher analyzed the data by using some ways. First, presenting the data. The purpose of this presenting data is rich and detail include: the scientific writing in brief and the gathered words. Second,developing the result in the form of classification and the meaning. The purpose of this developing is to find out the pattern include: the word formation process and the meaning of the terms.

Third, intepreting the result. The purpose of this intepreting is to make sense the result of analysis include: the data intepretation. And at the very last is drawing a conclusion of the study.

In analyzing the data, the writer uses some dictionaries to help him find the meaning of the terms, the dictionaries used are: Oxford Advanced



Learner's Dictionary of Current English by Hornby, A.S., The World  
Book Dictionary and the Dictionary of Business Finance by Cliffs, N.J.

## **CHAPTER IV**

### **FINDING AND DISCUSSION**

After doing all steps mentioned in the previous chapter, the writer would like to present the result of the data gathering and data analysis.

This chapter present the finding of the research and discussion of the findings. This chapter also give any detail information and analysis as a lead to understand the word formation process in the technical terms used in scientific writing. In this chapter, the presentation of the terms is classified in to two kinds, words and phrases. After that, the writer discusses the problem of the study by explaining the process of word formation and also the name of word formation process, then the writer also explain the new meanings of the words that resulted after having word formation process.

#### **4.1. Data presentation**

After collecting the datas from the journals and dissertation, the technical terms that used on it could be observed from its word formation processes. The complete data were presented in the line as follows:

##### **4.1.1. The Scientific Writing in Brief**

The scientific writing that used as the research object in this study is taken from some journals and dissertation. The themes of the working papers or the articles are based on the study programe that able in UIN Malang, those are Language and letters, Economy, Biology, Match, Education, Physic and Information Technology.

#### **4.1.1.1. Language**

A working paper under the title “language in science”, written by M.S. Thirumalai, P.Hd. on 2003.

#### **4.1.1.2. Economy**

A working paper under the title “Globalisation and Education, what do the trade, investment and migration literatures tell us? , written by Dirk Willem te Velde on 2005.

#### **4.1.1.3. Biology**

A research article under the title “Combined Optical Trapping and Single-Molecule Fluorescence”, written by Mathew J. Lang, Polly M. Fordyce and Steven M. Block on 2003. this taken from “Journal of Biology 2003, 2:6.”

#### **4.1.1.4. Match**

A working paper under the title “A simpler Approach to Intregation and the Fubini Theorem”, written by H. S. Bear and Dale Myers on 2005. This taken from a journal “MONTHLY, The American Mathematical” Volume 112, Number 1. published in January 2005.

#### **4.1.1.5. Education**

A working paper under the title “Lexically-Based Language Teaching: Metaphor in English for Specific Purposes”, written by Siusana Kweldju on 2006. this taken from “Jurnal Ilmu Pendidikan, Jilid 13, Nomor 3” that published by Lembaga Pendidikan Tenaga Kependidikan (LPTK) and Ikatan Sarjana Pendidikan Indonesia (ISPI).

#### 4.1.1.6. Physic

A dissertation under the title “Reinforcement learning and it’s application to control”, written by Vijay Kumar Gullapalli on 1992.

#### 4.1.1.7. Information and Technology

A working paper under the title “Reconciliation of knowledge-application in automated database design diagnosing” written by Shahrul Azman mohd. Noah and Micahel Williams on 2001. This taken from The International Journal of Information Technology, published by Universiti Kebangsaan Malaysia on 2001.

#### 4.1.2. The Technical Terms Ordinarily Used in Scientific Writing.

The technical term that used in scientific writing have definition or meanings which are different from those of the words or phrases, which people use in daily life.

Due to the variety of those terms, in this study the writer classifies them in to two groups, namely single word terms and phrasal terms.

##### 4.1.2.1. Single word terms.

No.	Terms	No.	Terms
1.	Abstract	32.	Level
2.	Acknowledgement	33.	Linkages
3.	Analogy	34.	Matrix
4.	Appendix	35.	Metaphor
5.	Approach	36.	Method
6.	Assumption	37.	Methodology
7.	Automata	38.	Microscope
8.	Background	39.	Migration
9.	Capital	40.	Model

10.	Case	41.	Multinational
11.	Chart	42.	Nanoscale
12.	Classification	43..	Observation
13.	Conclusion	44.	Outline
14.	Condition	45.	Parentheses
15.	Contents	46.	Partition
16.	Convergence	47.	Pedagogy
17.	Corollary	48.	Preface
18.	Distal	49.	Process
19.	DNA	50.	References
20.	Figure	51.	Result
21.	Fiscal	52.	Robotics
22.	Fluorescence	53.	Robust
23.	Heuristic	54.	Rule
24.	Integration	55.	Sensitivity
25.	Intervals	56.	Sequel
26.	Introduction	57.	Simplification
27.	Inward	58.	Source
28.	Issues	59.	Specimen
29.	Keywords	60.	Stationary
30	Lemma	61.	Sums
31	Table		

#### 4.1.2.2. Phrasal terms.

No.	Terms	No.	Terms
1.	After Care	14.	Fit Vehicles
2.	Arbitrary positive integer	15.	Manner Of Speaking,
3.	Artificial Intelligence	16.	Memory-Module
4.	Assignment Problem	17.	Motor proteins
5.	Bottom – Up	18.	Optical trapping
6.	Capital Flight	19.	Optical tweezer

7.	Credit Assignment	20.	Plane measure
8.	Design Synthesis	21.	Private Capital Flows
9.	Evanescent wave	22.	State Of The Art
10.	Executive Summary	23.	Theoretical Models
11.	Expansion In Trade	24.	Tourism Receipts
12.	Feed-Forward Network	25.	Two-photon excitation
13.	Fine-Motion	26.	Under-Constrained Manipulator

## 4.2. The Data Analysis

### 4.2.1. Single Word Terms

1. Term : Abstract

#### Classification

The morpheme of *abstract* is lexical free morpheme as the smallest meaningful unit. There is no word formation applied to this word, because abstract is an original word.

#### Meaning

##### Lexical Meaning

Abstract is not concrete

##### Contextual Meaning

Abstract is a brief statement of the main ideas or important point of an article, book, case in court or other printed material.

2. Term : Acknowledgement

#### Classification

The term *acknowledgement* is combination between lexical free morpheme *Acknowledge* with derivational bound morpheme *-ment*. The word formation process of that term is derivation.

Meaning

Lexical Meaning

Acknowledgement is to accept the truth of something.

Contextual Meaning

Acknowledgement is something that given or done to show that one has received a favor, service, give or message.

3. Term : Analogy

Classification

The term *analogy* is combination between lexical free morpheme *analogue* with derivational bound morpheme “y”. The word formation process of that term is borrowing from Greek that is *analogia* whose meaning is relation.

Meaning

Lexical Meaning

Analogy is a thing that is similar to another thing.

Contextual Meaning

Analogy in linguistics is the creation of a new word based on the pattern of an old one. ie: *astronaut* as the model of *argonaut*.

4. Term : Appendix

Classification

The morpheme of *appendix* is lexical free morpheme as the smallest meaningful unit. The word formation of this term borrowing from Latin *Appendere* whose meaning is *hang*.

Meaning

Lexical Meaning

Appendix ordinarily used in Biology whose meaning is the small saclike growth attached to the large intestine.

Contextual Meaning

Appendix is addition at the end of a book or document.

5. Term : Approach

Classification

The morpheme of *Approach* is lexical free morpheme as the smallest meaningful unit. The word formation of this term is borrowing from Old French *Aprochier* whose meaning is *Near*.

Meaning

Lexical Meaning

Approach is a way by which a place or person can be reached.

Contextual Meaning

Approach is a nearness in quality, character, time or condition.

6. Term : Assumption

Classification

The morpheme of Assumption is combination between lexical free morpheme *assume* with derivational bound morpheme *-ion*. The word formation process of the term *Assume* is borrowing from Latin *Assumere* whose meaning is *Take*. Then this term is combine with derivational bound morpheme *-ion*. So the word formation process of Assumption is Derivation.



Meaning

Lexical Meaning

Assume is taking for granted without any proof.

Contextual Meaning

Assumption is the act of assuming.

7. Term : Automata

Classification

The morpheme of *Automata* is lexical free morpheme as the smallest meaningful unit. The word formation process of this term is Borrowing from Greek *Automaton* whose meaning is *Under Automatic*.

Meaning

Lexical Meaning

Automata is ordinarily used in Physic whose meaning is action which entirely mechanical.

8. Term : Background

Classification

The term *Background* is combination between lexical free morpheme *Back* with also lexical free morpheme *ground*. The word formation process of that term is Compounding.

Meaning

Lexical Meaning

Back is the part of surface of an object that is furthest from the front.

Ground is the solid surface of the earth.the part of picture or scene toward the back.

### Contextual Meaning

Background is an information that concerning to something.

## 9. Term : Capital

### Classification

The term *Capital* is lexical free morpheme as the smallest meaningful unit.

The word formation process of that term is Borrowing from Latin *Capita* whose meaning is head.

### Meaning

### Lexical Meaning

Capital is the city or town where the government of a country, state or province is officially located.

### Contextual Meaning

The term Capital is ordinarily used in economic whose meaning is the money that spend to build a company or another bussiness.

## 10. Term : Case

### Classification

The term *Case* is lexical free morpheme as the smallest meaningful unit.

There is no word formation process of this term, because case is an original English term.

### Meaning

### Lexical Meaning

Case is a matter for a law to decide.

### Contextual Meaning

Case is also usually used to state an example. This usually used in match, physic, and another disciplinnes.

11. Term : Chart

### Classification

The term *Chart* is lexical free morpheme as the smallest meaningfull unit.

There is no word formation applied to this word, because chart is an original English word.

### Meaning

#### Lexical Meaning

*Chart* is an outline map showing special condition or fact.

### Contextual Meaning

*Chart* is a graphic representation of any variable.

12. Term : Classification

### Classification

The term *Classification* is combination between lexical free morpheme *Classify* with derivational bound morpheme *-ion*. The word formation process of that term is Derivation.

### Meaning

#### Lexical Meaning

*Classify* is to arrange something to categories ang groups.

### Contextual Meaning

*Classification* is the arrangement in classes or groups.this term is also usually used in Biology, this means the arrangement of basic plants or

animals in group or categories on the basis of ancestral relationship or structure.

13. Term : Conclusion

Classification

The term *Conclusion* is combination between lexical free morpheme *Conclude* with derivational bound morpheme *-ion*. The word formation process of that term is Derivation.

Meaning

Lexical Meaning

Conclude is a decision of what one believes as a result of reasoning.

Contextual Meaning

Conclusion is the final part of a story, writing, speech, etc.

14. Term : Condition.

Classification

The term *Condition* is lexical free morpheme as the smallest meaningful unit. There is no word formation applied to this word, because *Condition* is an original English word.

Meaning

Lexical Meaning

*Condition* is a state in which a person or thing is good or bad. This term also means a fit or satisfactory state for work, market, etc.

15. Term : Contents

Classification

The term *Contents* is combination between lexical free morpheme *Content* with inflectional bound morpheme *-s* which indicates the plural form of *content*. The word formation process of that term is Derivation.

Meaning

Lexical Meaning

Contents is size or extent.

Contextual Meaning

Contents is what is written in a book or said in a speech.

16. Term : Convergence.

Classification

The term *Convergence* is combination between lexical free morpheme *Converge* with derivational bound morpheme *-ence*. The word formation process of that term is Derivation.

Meaning

Lexical Meaning

*Converge* is to become similar or the same.

Contextual Meaning

*Convergence* is the tendency in animals or plants not closely related to develop the same characteristic when living under the same condition.

This meaning ordinarily used in Biology.

17. Term : Corollary.

Classification

The term *Corollary* is lexical free morpheme as the smallest meaningful unit. There is no word formation applied to this word, because *Corollary* is an original English word.

Meaning

Lexical Meaning

*Corollary* is a natural consequence or result.

Contextual Meaning

*Corollary* is something proved by inference from something else already proved.

18. Term : Distal.

Classification

The term *Distal* is lexical free morpheme as the smallest meaningful unit. There is no word formation applied to this word, because *Distal* is an original English word.

Meaning

Lexical Meaning

*Distal* is something away from the center or point of origin.

19. Term : DNA.

Classification

The term *DNA* is the acronym of Deoxyribo Nucleic Acid. So the word formation process of that term is Acronym.

Meaning

Lexical Meaning

*DNA* is the substance of which most genes are made and that is chiefly responsible for the transmission of inherited characteristics.

20. Term : ESP.

Classification

The term ESP is the acronym of Extrasensory Perception. So the word formation process of that term is Acronym.

21. Term : Figure.

Classification

The term *Figure* is lexical free morpheme as the smallest meaningful unit. There is no word formation applied to this word, because *Figure* is an original English word.

Meaning

Lexical Meaning

*Figure* is a specific amount.

Contextual Meaning

*Figure* is a picture, drawing, diagram or other illustration.

22. Term : Fiscal.

Classification

The term *Fiscal* is lexical free morpheme as the smallest meaningful unit. The word formation process of that term is Borrowing from Latin *Fiscalis* whose meaning is *Under Fisch*.

Meaning

Lexical Meaning

*Fiscal* is Financial.

Contextual Meaning

*Fiscal* is usually used in Tourism. This is the tax that must be paid when someone wants to enter another country.

23. Term : Fluorescence.

Classification

The term Fluorescence is lexical free morpheme. The word formation process of that term is back formation from the word fluoresce.

Meaning

Lexical Meaning

*Fluorescence* is a giving off of light by a substance exposed to X rays or certain other rays.

24. Term : Heuristic.

Classification

The term *Heuristic* is lexical free morpheme as the smallest meaningful unit. The word formation process of that term is Borrowing from Greek *Heuriskein* whose meaning is *to find*.

Meaning

Lexical Meaning

*Heuristic* is serving to find out or discover.

Contextual Meaning

*Heuristic* is the study or use of discover procedures in science.



25. Term : Integration

Classification

The term *Integration* is combination between lexical free morpheme *integrate* with derivational bound morpheme *-ion*. The word formation process of that term is Derivation.

Meaning

Lexical Meaning

*Integrate* is to combine two thing.

Contextual Meaning

*Integration* is the coordination of the functions of the receptor, connector and effector or motor cells. This meaning is ordinarily used in Biology.

26. Term : Intervals

Classification

The term *Intervals* is combination between lexical free morpheme *Interval* with inflectional bound morpheme *-s* which indicates the plural form of *Interval*. word formation process of that term is Derivation.

Meaning

Lexical Meaning

*Intervals* is the space between thing.

Contextual Meaning

*Intervals* is the difference in pitch between two tones.

27. Term : Introduction.

Classification

The term Introduction is combination between lexical free morpheme *introduce* with derivational bound morpheme *-ion*. The word formation process of that term is Borrowing from Latin *Introducere* whose meaning is to lead..

Meaning

Lexical Meaning

*Introduce* is the act of introducing.

Contextual Meaning

*Introduction* is a section at the beginning of book, articles, play or other.

28. Term : Inward

Classification

The term *Inward* is a lexical free morpheme as the smallest meaningful unit. There is no word formation applied to this word, because *inward* is an original English word.

Meaning

Lexical Meaning

*Inward* is to ward the inside..

Contextual Meaning

*Inward* is the internal part of the body or anything.

29. Term : Issues

Classification

The term Issues is combination between lexical free morpheme Issue with inflectional bound morpheme *-es* which indicates the plural form of the Issue. The word formation process of that term is Borrowing from Old French Issue whose meaning is *earlier*.

Meaning

Lexical Meaning

*Issue* is send out in to public circulation.

Contextual Meaning

*Issues* is a disagreements.

30. Term : Keywords

Classification

The term Keywords is combination between lexical free morpheme key and word. Then this new term also combined with the inflectional bound morpheme *-s* whichs indicates the plural form of keyword..The word formation process of that term is Compounding.

Meaning

Lexical Meaning

*Key* is small metal tod for opening or closing lock. And *word* is a sound or a groups of sounds that express meaning and forms an independent unit of language.

### Contextual Meaning

*Keyword* is a word that serves as a guide to find other words or topics in a list.

31. Term : Lemma

### Classification

The term *Lemma* lexical free morpheme as the smallest meaningful unit. The word formation process of that term is Borrowing from Greek *Lemma* whose meaning is *perfect stem of something*.

### Meaning

#### Lexical Meaning

*Lemma* is a subsidiary or auxiliary proposition to be used in the proof of a main proposition.

32. Term : Level

### Classification

The term Level is lexical free morpheme as the smallest meaningful unit. There is no word formation applied to this word, because chart is an original English word.

### Meaning

#### Lexical Meaning

*Level* is the height.

### Contextual Meaning

*Level* on figurative meaning is the standart amount of something.

33. Term : Linkage

Classification

The term Linkage is combination between lexical free morpheme Link and also lexical free morpheme age..The word formation process of that term is Compounding.

Meaning

Lexical Meaning

*Link* is connection between one and others. And *age* is a priod of histiry with special characteristics or events.

Contextual Meaning

*Linkage* is a policy or practice of having some aspects of the relation between two countries dependent upon the succes or failure of another aspect of their relationship. This also can be said an association of two or more genes on the same cromosome so that they are transmitted together. The lattest is usually used in Biology.

34. Term : Matrix

Classification

The term *Matrix* is lexical free morpheme as the smallest meaningful unit.The word formation process of that term is Borrowing from Latin *Matrix* whose meaning is *breeding animal*.

Meaning

Lexical Meaning

*Matrix* is subject to operations such as multiplication or inversion according to specified rules.

35. Term : Metaphor

Classification

The term *Metaphor* is lexical free morpheme as the smallest meaningful unit. The word formation process of that term is Borrowing from Greek *Metaphoro* whose meaning is a transfer ultimately.

Meaning

Lexical Meaning

*Metaphor* is an implied comparison between two different things.

Contextual Meaning

*Metaphor* is something concrete used to represent an idea, quality or condition.

36. Term : Method

Classification

The term *Method* is lexical free morpheme as the smallest meaningful unit. The word formation process of that term is Borrowing from Greek *Methodus* whose meaning is Method.

Meaning

Lexical Meaning

*Method* is a way of doing something especially according to a defined plan.

Contextual Meaning

*Method* is arrangement of idea and topic in writing.

37. Term : Methodology

Classification

The term *Methodology* is combination between lexical free morpheme Method and logy. The word formation process of that term is Borrowing from Greek *Mehodus* whose meaning is method and *logya* whose meaning is science or system.

Meaning

Lexical Meaning

*Method* is a way of doing something especially according to a defined plan.

Contextual Meaning

*Methodology* is the system of methods or procedures used in any field.

38. Term : Microscope

Classification

The term *Microscope* is combination between lexical free morpheme Micro and scope. The word formation process of that term is Borrowing from Greek *Mikros* whose meaning is Small and *scope* whose meaning is *Look at*.

Meaning

Lexical Meaning

*Micro* is small and *scope* is looking at.

Contextual Meaning

*Microscope* is a thing or instrument with a lens or a combination of lenses for making small thing look larger.

39. Term : Migration

Classification

The term *Migration* is combination between lexical free morpheme Migrate and derivational free morpheme *-ion*. The word formation process of that term is Derivation.

Meaning

Lexical Meaning

*Migrate* is the action of moving from one place to another.

Contextual Meaning

*Migration* is the action or process of migrating.

40. Term : Model

Classification

The term *Model* is lexical free morpheme. The word formation process of that term is Borrowing from Latin Modus whose meaning is measure.

Meaning

Lexical Meaning

*Model* is a person (especially women) who is wears new clothes in a clothing store, at a fashion show in order to show customers how the cloths look.

Contextual Meaning

*Model* is any formula, diagram, or scheme used to explain or describe relationship.



41. Term : Multinational

Classification

The term *Multinational* is combination between lexical free morpheme Nation and derivational free morpheme *-al*. then this new word also combine with lexical free morpheme *Multi* whose meaning is *many*. The word formation process of that term is Multiple process.

Meaning

Lexical Meaning

*Multi* is many and *natio* is taken from *Latin* whose meaning is *race*.

Contextual Meaning

*Multinational* is having to do with many nations.

Or this also can be said something just like a company which having branches, subsidiaries, plants and the like in many countries. This might be used in the Economic.

42. Term : Nanoscale

Classification

The term *Nanoscale* is combination between Latin's lexical free morpheme *Nano* and lexical free morpheme *scale*. The word formation process of that term is Compounding.

Meaning

Lexical Meaning

*Nano* is borrowing from Latin whose meaning is dwarf and *scale* is a range of values forming a system for measuring or grading.

43. Term : Observation

Classification

The term *Observation* is combination between lexical free morpheme Observe with derivational free morpheme *-ion*. The word formation process of that term is Derivation.

Meaning

Lexical Meaning

*Observation* is watch closely.

Contextual Meaning

*Observation* is the act watching and noting for specific purpose.

44. Term : Outline

Classification

The term *Outline* is combination between lexical free morpheme *Out* and lexical free morpheme *line*. The word formation process of that term is Compounding.

Meaning

Lexical Meaning

*Out* is a away from the inside of place and *line* is a long thin mark on the surface.

Contextual Meaning

*Outline* is a general plan, stretch, account or report giving only the main features.

45. Term : Parenthesis

Classification

The term *Parenthesis* is lexical free morpheme. The word formation process of that term is Borrowing from Greek *parenthesis* whose meaning is put in beside.

Meaning

Lexical Meaning

*Parenthesis* is an interval or digression.

Contextual Meaning

*Parenthesis* is either or both of two curved lines used to set off something within a sentence.

46. Term : Partition

Classification

The term *Partition* is lexical free morpheme. The word formation process of that term is Borrowing from Greek *Partitio* whose meaning is to part.

Meaning

Lexical Meaning

*Partition* is something that separates, such as a wall between rooms or other responding membrane in a plant or animal body.

Contextual Meaning

*Partition* in math is a way to expressing a number or a sum of positive whole number.

47. Term : Pedagogy

Classification

The term *Pedagogy* is combination of lexical free morpheme *pedagogue* and derivational morpheme *-y*. The word formation process of that term is Borrowing from Greek *Paidos* which means *boy* and *egogos* which mean *leader*.

Meaning

Lexical Meaning

*pedagogue* is instructor

Contextual Meaning

*Pedagogy* is the science of teaching.

48. Term : Preface

Classification

The term *Preface* is lexical free morpheme. The word formation process of that term is Borrowing from Latin *Praefatio* whose meaning is foretell.

Meaning

Lexical Meaning

*Preface* is an introductory part of a book, writing, or speech.

49. Term : Process

Classification

The term *Process* is lexical free morpheme. The word formation process of that term is Borrowing from Old French *proces* whose meaning is journey or going.

Meaning

Lexical Meaning

*Process* is a process of actions or changes in a special order.

50. Term : References

Classification

The term *References* is combination between lexical free morpheme *reference* and inflectional bound morpheme *-s* which indicates the plural form of *reference*. The word formation process of that term is Derivation.

Meaning

Lexical Meaning

*reference* is something used for information or help.

Contextual Meaning

*References* is a statement or book referred to.

51. Term : Result

Classification

The term *Result* is lexical free morpheme. The word formation process of that term is Borrowing from Latin *Resultare* whose meaning is to rebound.

Meaning

Lexical Meaning

*Result* is that which happens because of something.

52. Term : Robotic

Classification

The term *Robotic* is a lexical free morpheme. The word formation process of that term is Borrowing from Czech *Robota* whose meaning is work.

Meaning

Lexical Meaning

*Robot* is a machine that can perform the actions of a person and which operates automatically or controlled by computer.

Contextual Meaning

*Robotics* is a science or technology that deals with robot.

53. Term : Robust

Classification

The term *Robust* is lexical free morpheme. The word formation process of that term is Borrowing from Latin *Robustus* whose meaning is strength.

Meaning

Lexical Meaning

*Robust* is strong and healthy.

54. Term : Rule

Classification

The term *Rule* is lexical free morpheme. The word formation process of that term is Borrowing from Old French *Riule* whose meaning is rule.

Meaning

Lexical Meaning

*Rule* is a statement of what to do and not to do.

Contextual Meaning

*Rule* a straight strip used to measure or as a guide to drawing.

55. Term : Sensitivity

Classification

The term *Sensitivity* is combination between lexical free morpheme *sensitive* and the lexical bound morpheme *-ty*. The word formation process of that term is Derivation.

Meaning

Lexical Meaning

The term *sensitive* is borrowed from Old French *sensitif* whose meaning is almost the same.

Contextual Meaning

*Sensitivity* the condition or quality of being sensitive or also can be said the degree of responsiveness of an electrical or electronic device.

56. Term : Sequel

Classification

The term *Sequel* is lexical free morpheme as the smallest meaningful unit. The word formation process of that term is borrowing from Old French *Sequelle* whose meaning is *follow*.

Meaning

Lexical Meaning

*Sequel* is continuation or something that follows.

Contextual Meaning

*Sequel* is an inference.

57. Term : Simplification

Classification

The term *Simplification* is combination between lexical free morpheme *simple* and the lexical bound morpheme *-fy* become *simplify*, then this new term also added by lexical bound morpheme *-ation*. The word formation process of that term is Multiple process.

Meaning

Lexical Meaning

*simplify* is to make something simpler.

Contextual Meaning

*Simplification* is a change to a simpler form or condition.

58. Term : Source

Classification

The term *Source* is lexical free morpheme as the smallest meaningful unit. The word formation process of that term is Borrowing from Old French *Source* whose meaning is *to rise*.

Meaning

Lexical Meaning

*Source* is the place from which anything comes from.

Contextual Meaning

*Source* is a person, book, document, statement that supplies information.



59. Term : Specimen

Classification

The term *Specimen* is lexical free morpheme as the smallest meaningful unit. The word formation process of that term is Borrowing from Latin *Specere* whose meaning is to view.

Meaning

Lexical Meaning

*Specimen* is one of a group or class taken to show others are like; sample.

60. Term : Table

Classification

The term *Table* is lexical free morpheme as the smallest meaningful unit. The word formation process of that term is Borrowing from Latin *Tabula* whose meaning is slab for writing or painting.

Meaning

Lexical Meaning

*Table* is a piece of furniture having a smooth, flat top on legs.

Contextual Meaning

*Table* is an information in very brief form; an arrangement of numbers, words or other item in columns and lines to show relation.

**4.2..2. Phrasal Terms**

1. Term : After Care

Classification

The term *After* is classified as a lexical free morphem as adverb, while *care* is lexical free morpheme as verb. The word formation proces of this

phrasal is compounding, that is combination between two words to create a new one.

### Meaning

#### Lexical Meaning

After is later than something in time, Care is a feeling that something is important and interesting.

## 2. Term : Arbitrary Positive Integer

### Classification

*Arbitrary* and *Positive* are the same kind of morpheme, that is lexical free morpheme as adjective. And *integer* is a noun. The word formation process of this is compounding that joining three words in creating a new phrasal term.

### Meaning

#### Lexical Meaning

*Arbitrary* is based on the personal opinion or impulse, not on any reason or system. *Positive* is with no possibility of doubt. And *integer* is a whole number.

## 3. Term : Artificial Intelligence

### Classification

The word *artifice* is added with suffix *-al* becoming artificial to make an adjective (a multiple process). Hence this phrasal terms consists of two lexical free morphemes *artifice* and *intelligence* and a multiple process. Then the word formation of this phrasal term is compounding.

Meaning

Lexical Meaning

Artificial is made or produce as a copy of something natural and intelligence is the mental ability.

Contextual Meaning

*artificial intelligence* is the study and design of a system that perceives its environment and takes actions which maximizes its chances of success.

4. Term : Bottom-up

Classification

Both The word *Bottom and up* is lexical free morpheme which definitely cannot be derived into the smallest meaningful unit. Then the type of word formation of this phrasal term is compounding.

Meaning

Lexical Meaning

Bottom is the lowest part of something. Up is a preposition whose meaning is an act to a higher position.

5. Term : Capital Flight

Classification

Both The word *Capital* and *Flight* is lexical free morpheme as noun which definitely cannot be derived into the smallest meaningful unit. The type of word formation of this phrasal term is compounding.

Meaning

Lexical Meaning

Capital is wealth or property that can be used to produce more wealth. And

Flight is the action or an instance of running away from danger.

6. Term : Credit Assignment

Classification

The word *Credit and assignment* is lexical free morpheme as noun which definitely cannot be derived into the smallest meaningful unit. and

Assignment is a multiple process word, this from *Assign* to *assignment* which change the class of word. The type of word formation of this phrasal term is also compounding.

Meaning

Lexical Meaning

Credit is the system paying for goods or services that done later. And assignment is a task or duty.

7. Term : Design Synthesis

Classification

Both The word *Design and Synthesis* are lexical free morpheme as noun which definitely cannot be derived into the smallest meaningful unit. The type of word formation of this phrasal term is compounding.

Meaning

Lexical Meaning

Design is an out line from which something may be made. Synthesis is the combination of the separate thing to form a complex whole.

8. Term : Evanescent wave

Classification

The term *Evanescent* is a lexical free morpheme as an adjective and *wave* is lexical free morpheme as noun which definitely cannot be derived into the smallest meaningful unit. The type of word formation of this phrasal term is compounding.

Meaning

Lexical Meaning

Evanescent is something that quickly disappearing. And wave is

9. Term : Executive Summary

Classification

Both The *executive* and *summary* are lexical free morpheme as noun which definitely cannot be derived into the smallest meaningful unit. The type of word formation of this phrasal term is compounding.

Meaning

Lexical Meaning

Executive is having power to put an important decision in to effect. And summary is a brief statement of the main point of something.

10. Term : Expansion in Trade

Classification

The term *expansion* is a lexical free morpheme as a noun and the verb *Trade* is a lexical free morpheme which definitely cannot be derived into the smallest meaningful unit. While *In* is belongs to functional free morpheme. The type of word formation of this phrasal term is

compounding which combines three words which have different parts of speech.

Meaning

Lexical Meaning

Expansion is an action of expanding. And trade is a buying and selling activity.

11. Term : Feed Forward Network

Classification

The Verb *Feed* is a lexical free morpheme and *forward* is an adverb which morpheme is a lexical free morpheme. *Network* is a lexical free morpheme as a noun. The type of word formation of this phrasal term is compounding which combines three words which have different parts of speech.

Meaning

Lexical Meaning

Feed means to provide something regularly, forward means a head and network is a closely linked group of people.

12. Term : Fine Motion

Classification

The term *Fine* is an Adverb and *Motion* is a noun, both are the lexical free morpheme as the smallest meaningful unit. The type of word formation of this phrasal term is compounding.

Meaning

Lexical Meaning

Fine is an Adjective which means a very well in condition. And motion is the act of moving.

13. Term : Fit Vehicle

Classification

The terms *Fit* is a lexical free morpheme as an adjective. And *vehicle* is a lexical free morpheme as noun. And *S* belongs to derivational free morpheme. The type of word formation of this phrasal term is compounding.

Meaning

Lexical Meaning

Fit is a suitable quality of something. And Vehicles are thing that used for transporting goods or people.

14. Term : Manner of Speaking

Classification

The Verb *to speak* is added with *-ing* becoming *Speaking* to make a gerund. *Manner* is a lexical free morpheme as noun. Hence this phrasal consist of two lexical free morpheme *to speak* and *manner* and a functional free morpheme *of*. The type of word formation of this phrasal term is compounding.

Meaning

Lexical Meaning

Manner is a way in which something is done or happens. And speaking is to say the words.

15. Term : Memory Module

Classification

Both The term *memory and Module* are lexical free morpheme as noun which definitely cannot be derived into the smallest meaningful unit. The type of word formation of this phrasal term is compounding.

Meaning

Lexical Meaning

Memory is an Individual person's power to remember thing. And module is several independent unit that together form a course of study.

16. Term : Motor Protein

Classification

Both The term *Motor and Protein* are lexical free morpheme as noun which definitely cannot be derived into the smallest meaningful unit. The type of word formation of this phrasal term is compounding.

Meaning

Lexical Meaning

Motor is a device that changes power to movement. And protein is a substance in foods.



17. Term : Optical Tweezer

Classification

The adjective *optical* is a derivational word formation from *optic* as a lexical free morpheme, added by *-al* as a derivational free morpheme. Then the Noun *Tweezer* is added by *-ing* to make a gerund. Hence this phrasal term consists of two derivational. The type of word formation of this phrasal term is multiple process.

Meaning

Lexical Meaning

Optical is the sense of sight, used for improving the way one sees something. Tweezer is a small implement with two thin arms picking up very small things.

18. Term : Plane Measure

Classification

Both the terms *plane* and *measure* are lexical free morphemes as nouns which definitely cannot be derived into the smallest meaningful unit. The type of word formation of this phrasal term is compounding.

Meaning

Lexical Meaning

Plane is an aircraft and measure is an action to achieve a purpose.

19. Term : Private Capital Flows

Classification

The adjective *private* is a lexical free morpheme. *Capital* is a noun and *flow* is a verb, both are also as lexical free morphemes. Hence this phrasal

consist of three lexical free morpheme. The type of word formation of this phrasal term is compounding.

### Meaning

#### Lexical Meaning

Private is belonging to one particular person or group only. Capital is wealth or property that can be used to produce more wealth. And flows is to move freely and continuously.

20. Term : State of the Art

### Classification

The Verb *State* is a lexical free morpheme and the Noun *Art* is also. And *of* is belonging to the functional free morpheme. Then this phrasal term have one compounding and a conversion, so the word formation process of this phrasal term is multiple process.

### Meaning

#### Lexical Meaning

State is to express something in spoken or written. And Art is the impression of human creative talent

#### Contextual Meaning

Something that using the most modern or advanced technique or method.

21. Term : Theoretical Model

### Classification

The adjective *theoretical* is a derivational word formation from *theory* as a lexical free morpheme, added by *-al* as a derivational free morpheme. Then the verb model is a lexical free morpheme. Hence this phrasal consist

of two derivational. The type of word formation of this phrasal term is compounding.

Meaning

Lexical Meaning

Theoretical is something that concerned with theory of a subject. This possibly true, but not confirmed or tested in practice. And model is to take something as an example for one's action.

22. Term : Tourism Receipt

Classification

Both The term *tourism and receipt* are lexical free morpheme as noun. The type of word formation of this phrasal term is compounding.

Meaning

Lexical Meaning

Tourism is the business of providing accommodation and services for people visiting a place. And receipt is the money received by business.

23. Term : Two Photon Excitation

Classification

The term *two-photon*, a noun which formed from a compounding process, is a lexical free morpheme. And the term *excitation* is a comes from a derivational process. The type of word formation of this phrasal term is compounding.

### Meaning

### Lexical Meaning

Two is a number greater than one. Photon is a unit of electromagnetic energy. And excitation is the state of being excited.

24. Term : Under Constrained Manipulator

### Classification

The term *under* is a lexical free morpheme as a preposition. *constrained* is a lexical free morpheme as a verb and *manipulator* is a derivational process which comes from the word *manipulate* that added by *or* as a noun forming. Hence this phrasal consist of three lexical free morpheme. The type of word formation of this phrasal term is compounding.

### Meaning

### Lexical Meaning

Under is a position that is below or beneath something. Constrained is forcing something to act or behave, and manipulator is a person or thing which is manipulates.

## **4.3. The Result of Analysis**

The Analyzed data are divided into form of word-formation processes, they are Derivation, borrowing, compounding, acronym, multiple process and unidentified (the original English word), and the meaning change of the terms.

### **4.3.1. The Word Formation Process of the Terms**

The word formation process of the technical terms used in scientific writing are presented by the writer in the tabulated form as follows:

### 4.3.1.1. Single Word Terms

No.	Terms	The Process of word formation
1.	Abstract	There is no word formation applied to this word, because abstract is an original word.
2.	Acknowledgement	The word formation process of that term is derivation.
3.	Analogy	The word formation process of that term is borrowing from Greek that is <i>analogia</i> whose meaning is relation.
4.	Appendix	The word formation of this term borrowing from Latin <i>Appendere</i> whose meaning is <i>hang</i> .
5.	Approach	The word formation of this term is borrowing from Old French <i>Aprochier</i> whose meaning is <i>Near</i> .
6.	Assumption	The word formation process of Assumption is Derivation.
7.	Automata	The word formation process of this term is Borrowing from Greek <i>Automaton</i> whose meaning is <i>Under Automatic</i> .
8.	Background	The word formation process of that term is Compounding.
9.	Capital	The word formation process of that term is Borrowing from Latin <i>Capita</i> whose meaning is head.
10.	Case	There is no word formation process of this term, because case is an original English term.
11.	Chart	There is no word formation applied to this word, because chart is an original English word.
12.	Classification	The word formation process of that term is Derivation.
13.	Conclusion	The word formation process of that term is Derivation.
14.	Condition	There is no word formation applied to this word, because Condition is an original English word.
15.	Contents	The word formation process of that term is Derivation.

16.	Convergence	The word formation process of that term is Derivation.
17.	Corollary	There is no word formation applied to this word, because Corollary is an original English word.
18.	Distal	There is no word formation applied to this word, because Distal is an original English word.
19.	DNA	So the word formation process of that term is Acronym.
20.	ESP	So the word formation process of that term is Acronym.
21.	Figure	There is no word formation applied to this word, because Figure is an original English word.
22.	Fiscal	The word formation process of that term is Borrowing from Latin <i>Fiscalis</i> whose meaning is <i>Under Fisch</i> .
23.	Fluorescence	The word formation process of that term is back formation from the word fluoresce.
24.	Heuristic	The word formation process of that term is Borrowing from Greek <i>Heuriskein</i> whose meaning is <i>to find</i> .
25.	Integration	The word formation process of that term is Derivation.
26.	Intervals	word formation process of that term is Derivation.
27.	Introduction	The word formation process of that term is Borrowing from Latin <i>Introducere</i> whose meaning is to lead..
28.	Inward	There is no word formation applied to this word, because inward is an original English word.
29.	Issues	The word formation process of that term is Borrowing from Old French <i>Issue</i> whose meaning is <i>earlier</i> .
30.	Keywords	The word formation process of that term is Compounding.
31.	Level	There is no word formation applied to this word, because chart is an original English word.
32.	Linkages	The word formation process of that term is Compounding.

33.	Matrix	The word formation process of that term is Borrowing from Latin <i>Matrix</i> whose meaning is <i>breeding animal</i> .
34.	Metaphor	The word formation process of that term is Borrowing from Greek <i>Metaphoro</i> whose meaning is a transfer ultimately.
35.	Method	The word formation process of that term is Borrowing from Greek <i>Methodus</i> whose meaning is Method.
36.	Methodology	The word formation process of that term is Borrowing from Greek <i>Mehodus</i> whose meaning is method and <i>logya</i> whose meaning is science or system.
37.	Microscope	The word formation process of that term is Borrowing from Greek <i>Mikros</i> whose meaning is Small and <i>scope</i> whose meaning is <i>Look at</i> .
38.	Migration	The word formation process of that term is Derivation.
39.	Model	The word formation process of that term is Borrowing from Latin <i>Modus</i> whose meaning is measure.
40.	Multinational	The word formation process of that term is Multiple process.
41.	Nanoscale	The word formation process of that term is Compounding.
42.	Observation	The word formation process of that term is Derivation.
43.	Outline	The word formation process of that term is Compounding.
44.	Parentheses	The word formation process of that term is Borrowing from Greek <i>parenthesis</i> whose meaning is put in beside.
45.	Partition	.The word formation process of that term is Borrowing from Greek <i>Partitio</i> whose meaning is to part.
46.	Pedagogy	The word formation process of that term is Borrowing from Greek <i>Paidos</i> which means <i>boy</i> and <i>egogos</i> which mean <i>leader</i> .
47.	Preface	The word formation process of that term is Borrowing from

		Latin <i>Praefatio</i> whose meaning is foretell.
48.	Process	The word formation process of that term is Borrowing from Old French <i>proces</i> whose meaning is journey or going.
49.	References	The word formation process of that term is Derivation.
50.	Result	The word formation process of that term is Borrowing from Latin <i>Resultare</i> whose meaning is to rebound.
51	Robotics	The word formation process of that term is Borrowing from Czech <i>Robota</i> whose meaning is work.
52.	Robust	The word formation process of that term is Borrowing from Latin <i>Robustus</i> whose meaning is strenght.
53.	Rule	The word formation process of that term is Borrowing from Old French <i>Riule</i> whose meaning is rule.
54.	Sensitivity	The word formation process of that term is Derivation.
55.	Sequel	The word formation process of that term is borrowing from Old French <i>Sequelle</i> whose meaning is <i>follow</i> .
56.	Simplification	The word formation process of that term is Multiple process.
57.	Source	The word formation process of that term is Borrowing from Old French <i>Sourse</i> whose meaning is <i>to rise</i> .
58.	Specimen	The word formation process of that term is Borrowing from Latin <i>Specere</i> whose meaning is to view.
59.	Lemma	The word formation process of that term is Borrowing from Greek <i>Lemma</i> whose meaning is <i>perfect steem of something</i> .
60.	Table	The word formation process of that term is Borrowing from Latin <i>Tabula</i> whose meaning is slab for writing or painting.



#### 4.3.1.2. Phrasal Terms

No.	Word	The Process of word formation
1.	After Care	The word formation proces of this phrasal is compounding, that is combination between two words to create a new one.
2.	Arbitrary positive integer	The word formation process of this is compounding that joining three words in creating a new phrasal term.
3.	Artificial Intelligence	The word formation of this phrasal term is compounding.
4.	Bottom – Up	Then the type of word formation of this phrasal term is compounding.
5.	Capital Flight	The type of word formation of this phrasal term is compounding.
6.	Credit Assignment	The type of word formation of this phrasal term is also compounding.
7.	Design Synthesis	The type of word formation of this phrasal term is compounding.
8.	Evanescent wave	The type of word formation of this phrasal term is compounding.
9.	Executive Summary	The type of word formation of this phrasal term is compounding.
10.	Expansion In Trade	The type of word formation of this phrasal term is compounding which combines three ords which have different part of speech.
11.	Feed-Forward Network	The type of word formation of this phrasal term is compounding which combines three words which have different part of speech.
12.	Fine-Motion	The type of word formation of this phrasal term is compounding.
13.	Fit Vehicles	The type of word formation of this phrasal term is compounding.
14.	Manner Of	The type of word formation of this phrasal term is compounding.

	Speaking,	
15.	Memory-Module	The type of word formation of this phrasal term is compounding.
16.	Motor proteins	The type of word formation of this phrasal term is compounding.
17.	Optical tweezer	The type of word formation of this phrasal term is multiple process.
18.	Plane measure	The type of word formation of this phrasal term is compounding.
19.	Private Capital Flows	The type of word formation of this phrasal term is compounding.
20.	State Of The Art	The word formation process of this phrasal term is multiple process.
21.	Theoretical Models	The type of word formation of this phrasal term is compounding.
22.	Tourism Receipts	The type of word formation of this phrasal term is compounding.
23.	Two-photon excitation	The type of word formation of this phrasal term is compounding.
24.	Under-Constrained Manipulator	The type of word formation of this phrasal term is compounding.

### 4.3.2. Mostly Used word-formation

#### 4.3.2.1 Table of type of word-formation

No	Type of word-formation	Frequency
01.	Borrowing	29
02.	Compounding	27
03.	Derivation	13
04.	Multiple process	4
05.	Acronym	2
06.	Un-identified	9
<b>Amount</b>		<b>84</b>

#### 4.3.2.2 Taxonomy <sup>19</sup>

##### 4.3.2.2.1 The taxonomy of Borrowing as table word-formation process.

No.	Subtype of word-formation	Example	Freq.
01.	Borrowing from Greek	The word “ <b>analogy</b> ” <i>analogia</i>	11
02.	Borrowed from Latin	The word “ <b>appendix</b> ” from <i>appendere</i>	11
03.	Borrowed from Old French	The word “ <b>Approach</b> ” from <i>Aprochier</i>	6
04.	Borrowed from Czech	The word “ <b>Robotic</b> ” from <i>Robota</i>	1
<b>Amount</b>			<b>29</b>

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<sup>19</sup>

**4.3.2.2.2 The taxonomy of Compounding as table word-formation process.**

No.	Subtype of word-formation	Examples	Freq.
01.	With separate word	<p>a. The term <i>Keywords</i> from <i>key</i> and <i>word</i>.</p> <p>b. The term <i>Artificial Intelligence</i></p>	27
<b>Amount</b>			27

**4.3.2.2.3 The taxonomy of Derivation as table word-formation process.**

No	Subtype of word-formation	Examples	Freq.
01.	With suffixes	<p>a. The word <i>Observation</i> from <i>Observe</i></p> <p>b. The word <i>Acknowledgement</i> from <i>Acknowledge</i></p>	13
<b>Amount</b>			13

**4.3.2.2.4 The taxonomy of Multiple Process as table word-formation process.**

No.	Subtype of word-formation	Example	Freq.
01.	<b>Multiple Process</b>	a. The word Multinational (compounding and change the class of the word)	4
<b>Amount</b>			4

**4.3.2.2.5 The taxonomy of Acronym as table word-formation process.**

No.	Subtype of word-formation	Example	Freq.
01.	<b>Acronym</b>	a. The term DNA from Deoxyribo Nucleic Acid b. The term ESP from Extrasensory Perception	2
<b>Amount</b>			2

**4.3.2.2.6 The taxonomy of Unidentified words as table word-formation process.**

No.	Subtype of word-formation	Example	Freq.
01.	<b>Stem word</b>	a. The word case b. The word Figure	9
<b>Amount</b>			9

**4.3.3. The New Meaning that resulted from the meaning change that happened in the technical terms.**

As what has proposed by the writer of this thesis on the chapter II, the four types of semantic change that proposed by David Crystal has take a great part in answering the last problem statements of this study.

After having analization on the gathered data, there is a type of semantic change that mostly happened on the scientific technical terms, it was Extension or generalization. This because the scientific technical terms mostly taken from the ordinary or day to day language which has only a simple meaning, while it is attached to the scientific writing, the meaning become to the more complex one. An example of this is the term table. On the ordinary or day to day language

meaning, table is only a piece of furniture, but the meaning become more general while it is used as a mean to present the data in a researc field.

From the analization above, it means that meaning is dynamic. Called as a dynamic one because meaning can be changed to be more specific or general because of the using of the term.

#### **4.4. The Data Interpretation**

having an enjoyment in reading a scientific writing for layman does not only require an enough vocabulary, but also an amount of additional information about the meaning of the terms that become wore widely in the scientific writing. Of all cases, mostly of the technical terms in scientific writing comes from a new modification and also has a semantic change. Of course this case can not be related by the most scientific reader today, If they didn't know about 50% of the technical terms in scientific writing they will missed the message that containing by the scientific writing.

This research is important that words makes fundamental of communication. All of the people know the word and they use it. While the technical terms, not all the people can interprete it and know the meaning of it because technical terms is a special term which is containt an also special meaning.

## **CHAPTER V**

### **CONCLUSION AND SUGGESTION**

Based on the findings and discussion in this study, the conclusion is drawn as follows:

#### **5.1 Conclusion**

Refer back to the problem of the study, there are two statements relates to conclusion:

##### **5.1.1 The word-formation processes of technical terms used in scientific writing as follows:**

Borrowing is forming of a new word by taking over of words from other language. Borrowing has 29 times appeared from the 84 sample data. Compounding is a joining of two separate words to produce a single form. It has 27 times appeared from the 84 sample data. Derivation is forming of a new word by adding affixes to the existing word. Derivations which are formed by add suffixes has 13 times appeared from the 84 sample data. Multiple processes are the operation more than one process at work in the creation of a particular word. In this research, they has 4 times appeared from 84 sample datas. Acronym is some words are formed from the initial letters of a set of other words; it has twice appeared in 84 sample datas. The Stem words which do not has any word formation process has 9 times appeared from 84 sample datas.

##### **5.1.2 The Word Formation process Mostly Happened in Creating the Terms.**

The mostly happened word formation process in creating the terms is Borrowing, that is forming a new word by taking over of words from

other language. Borrowing has 29 times appeared from the 84 sample datas.

### **5.1.3 Semantic change on the technical terms used in scientific writing**

There is ofcourse a semantic change happened in the technical terms. And the mostly type of the semantic change that happened is Extension or generalization.

## **5.2. Suggestion**

Based on the findings, the writer hopes that the language researchers move explore his/her research in other aspects in order to enrich the understanding about word-formation and the meaning change. The writer also hopes to the readers of scientific writing to make sense of their understanding in language especially in word-formation and meaning change. At last, the researcher who wants to conduct a research in the same topic of this, give a much attention to the theories of the morphology and semantic (especially in meaning change).



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## **Appendixes**

### **1. Certificate of authorship of the thesis**

Name : Mukhammad As'ad  
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Certificate that the thesis I've wrote to fulfill the requirement for the degree of Sarjana Sastra entitled Technical Terms Used in Scientific Writing: A Morphological and Semantic Studies is truly my original work. It does not incorporate any material previously written or published by other persons, except those which are indicated in the notes, quotations and bibliography. Due to this fact, I am the only person who is responsible for the thesis if there is any objection or claim from others.

Malang, October 22, 2007

The writer

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