DISCOURSE ON ENVIRONMENTAL ISSUES IN INDONESIA'S MEDIA

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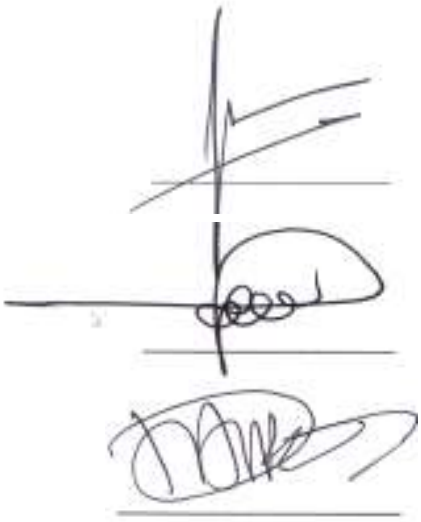

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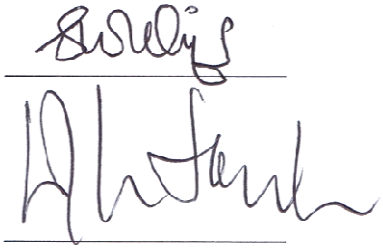

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ABSTRACT

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Keywords : *discourse, functional, experiential, transitivity, meanings, field, tenor, mode,*
gender, ideology, environmental issues.

This study is concerned with discourse on environmental issues in Indonesian media. It is aimed at finding out how the experiential meanings of the discourse on environmental issues are realized and what ideologies are encoded in the discourse on environmental issues. The data of this study are the article, news story, and feature about environmental issues published in the daily newspaper, *The Jakarta Post*, in 2010.

In an attempt to answer the first query, the writer refers to systemic functional approach. The focus of this study is on the organization of the clause to realize the experiential meaning of the discourse on environmental issues in Indonesian media. The description of this experiential strand of meaning involves one major system, that of Transitivity (process type), with the choice of process implicating associated participant roles and configurations.

Based on the result of the overall analysis conducted before, the writer searched for the ideologies in the texts. As ideology impacts on each of the levels of context, and through them is realized in linguistic choices, the linguistic evidence from all the preceding analyses can be used to make explicit what positions, biases, and interpretations are encoded in the texts.

The close-up linguistic analysis of three different texts has illustrated that the texts are rich in meanings: they make not just meanings about what goes on and why, but also meanings about relationships and attitudes, and meanings about distance and proximity. The experiential meanings of the discourse on environmental issues are realized in a subtle way by following the pattern of transitivity system.

By relating specific linguistic choices to the construction and reflection of situational, cultural and ideological context, these three texts have been shown to in fact encode meanings about such far reaching dimensions as: the threat that climate change poses to our earth and civilization, religion encouragement of altruism by promising a reward in the hereafter as well as in the world and that living a simple life is the essence of conservation, whereas luxurious life will result in resource depletion and environmental pollution, and the reminder that we contribute to the loss of tropical species and how we reduce poverty on the one hand goals while saving the environment on the other.

PERNYATAAN

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DISCOURSE ON ENVIRONMENTAL ISSUES IN INDONESIA'S MEDIA

Yang saya tulis dalam rangka memenuhi salah satu syarat untuk memperoleh gelar sarjana ini benar-benar merupakan karya saya sendiri, yang saya hasilkan setelah penelitian, pembimbingan, diskusi dan ujian. Baik kutipan yang langsung maupun tidak langsung yang diperoleh dari sunber perpustakaan, wahana elektronik maupun sumber lainnya telah disertai keterangan identitas sunbernya dengan cara sebagaimana yang lazim dalam penulisan karya ilmiah. Dengan demikian, jika ada masalah kelak di kemudian hari maka akan menjadi tanggung jawab saya sendiri. Demikian, harap pernyataan ini digunakan seperlunya.

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The writer

Do, or do not. There is no “try”. (Yoda)

Dedicated to

My inspiration,

My beloved mother and father

My lovely sister and

My cute niece Aza

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CHAPTER I

INTRODUCTION

This chapter discusses the background of the study, the reason of choosing the topic, the statement of the problems, the objectives of the study, the significance of the study, the limitation of the study and the organization of the project.

1.1. Background of the Study

The systemic functional approach is increasingly being recognized as providing a very useful descriptive and interpretive framework for viewing language as a strategic, meaning-making resource Common to all the systemic linguists is an interest in how people use language with each other in accomplishing everyday social life. This interest leads systemic linguists to advance four main theoretical claims about language: that language use is functional; that the function is to make meanings; that these meanings are influenced by the social and cultural contexts in which they are exchanged; and that the process of using language is a semiotic process, a process of making meanings by choosing (Eggins, 1994:2)

Halliday (e.g. 1985a, 1985b) has argued that language is structured to make three main kinds of meanings simultaneously. This semantic complexity, which allows experiential, interpersonal, and textual meanings to be fused together in linguistic units, is possible because language is a semiotic system: a conventionalized coding system, organized as sets of choices.

Forty years after the first Earth Day was celebrated in the US we find the earth today is not improving, some would say it is even getting worse. However today, at least public awareness about the importance of saving our blue planet is much better than 40 years ago, including here in Indonesia. The challenge, meanwhile, remains huge.

Awareness is much better now as evident from various events organized to promote green technology, green development and even green economy, in spite of the fact that we still see many factories dumping toxic waste. Mining companies leave their open pits unattended; illegal loggers freely plunder our tropical forests; public buses pollute our skies with their black fumes; and many of us who live in urban areas still use and consume products that are not environmentally friendly.

Our fellow countrymen who live in the countryside may be better in treating the environment, at least until recently. But now, with improved income and widespread consumerism, as promoted by our media – especially television – even people living in remote areas now imitate the lifestyle of people in the city.

In September 2009, when the parliament passed a new law strengthening the authority of the Environment Ministry it seemed as if the country was finally ready for concrete action. Since the Bali Climate Change Conference in December 2007, observers had certainly been expecting something. At the conference, President Susilo Bambang Yudhoyono emerged as a key leader in the fight for an international agreement on cutting greenhouse gas emissions. Changes in domestic policies, it

seemed, would almost certainly follow. Is Indonesia paying enough attention to environmental issues?

'A brief spot of joy amid the mud' published in *The Jakarta Post* on June 30, 2010 reminded us what happened in the early morning of May 29, 2006, when mud began to erupt from the earth, not far from the gas exploration owned by Lapindo Brantas Inc. Nobody knew then what would happen; but four years on, it has not stopped flowing, and has already destroyed 12 villages as well as displaced more than 60,000 people. Many villages are still threatened by the mud, which has been temporarily held at bay by a dyke.

In 2008, the equivalent of 50 Olympic swimming pools per day of toxic mud was spewing out of the nearby drilling hole. The BPLS, the government body in charge of tackling the disaster, is no longer able to measure the mud outflow, and nobody is able to predict when it will stop.

Nowadays, the mud is contained by a dyke encircling more than 800 hectares of wasteland. The excess mud is channeled into the Porong River, where, due to its toxic chemical composition (including benzene, toluene, heavy metals, ammonia), it is destroying marine ecosystems, thus the livelihood of downstream fishing communities, in turn compounding the economic impact of the mud on surrounding area. In 2007, the economic cost of this disaster was estimated to have reached US$4.8 bilion, and the economic growth from the district dropped from 6.7 percent in 2005 to 4.6 percent in 2006.

Lapindo Brantas Inc. to this day denies responsibility for causing the disaster, blaming an earthquake that occurred 300-kilometers away in Yogyakarta two days earlier.

However, Prof. Richard Davies, leader of an international research team headed by Durham University, stated in the UK-based newspaper, *The Observer*, that "there can be no doubt at all that it was physically impossible for the earthquake to cause this mud disaster". The Supreme Court ruled in April last year that the government and Lapindo were not guilty of any charges.

Discourse analysis has been previously conducted by scholars. Suzzane Eggins (1994) analyzed three different texs about how to cope with baby crying. She pointed out that the first text encodes an ideology of "coping" with natural behaviour sequences. The second text sees an ideology of non-coping, justifying professional intervention to avoid negative actions that parents may undertake if not helped. The third text ideologically encoded that the function of babies' behaviour is personal growth for parents!

J.R. Martin and David Rose (2003) analyzed texts about South African's struggle for independence. The texts they analyzed consists of Helena's story of injustice, Desmond Tutu's essay about the struggle and the Constitution of the Republic of South Africa and Australian song writer Paul Kelly expansion on the song From Little Things Big Things Grow.

Norman Fairclough (1989) analyzed the discourse on successive Conservative and Labour governments in relation with Thatcherism (Prime Minister Margaret Thatcher's ideology) in an attempt to reveal the language and power.

This study is attempting to find out (1) how the experiential meanings are realized in the discourse on environmental issues; (2) what ideologies are encoded in the discourse on environmental issues.

In doing this, I apply the approach of Systemic Functional Linguistics (SFL) proposed by M.A.K. Halliday (1995). SFL perceives language as a resource for making meanings. The systemicists have advanced four theoretical claims in language use: (1) that language is functional; (2) that the function is to make meanings; (3) these meanings are influenced by the context of situation and culture; and (4) that the language use is a semiotic process, a process of making meanings by choosing.

The data of this study is collected from printed media, particularly *The Jakarta Pos*t published in 2009/2010. The issues on environment are selected based on the assumption of Hegel's dialectical. The word *dialect* comes from the Greek and refers to a controversy where there is both an argument and a counter-argument. So it means the coming together of two opposing views. Put more simply it means not accepting that one thing is true and the opposite is false, but trying to see how each contributes to an understanding.

1.2 Statement of the Problems

The research questions of this study can be formulated as follows:

(1) How is the experiential meaning of the discourse on environmental issues realized?

(2) What ideologies are encoded in the discourse on environmental issues?

(3) What contribution does the discourse analysis give to the English education program in Indonesia and students' attitude towards the environment issues?

1.3 Objectives of the Study

Referring to the statement of the problems above, the objectives of this study are trying to find out:

(1) How the experiential meanings of the discourse on environmental issues are realized.

(2) What ideologies are encoded in the discourse on environmental issues.

(3) What contribution does the discourse analysis give to the English education program in Indonesia and students' attitude towards the environment issues?

1.4. Reasons for Choosing the Problem

Studies on environmental issues might have been conducted by scientists but this topic might be rarely highlighted from the perspective of linguistics to enhance the English language teachings. In line with the prestigious *Kalpataru* environmental

reward awarded by The President of Republic of Indonesia to the Rector of Semarang State University recently, the writer is inspired to write a final project concerning environmental issues and its pedagogical implication to English language teaching.

1.5 Significance of the Study

We have damaged the Earth so severely that devastating global environmental calamities may be looming in the future, jeopardizing the lives of our descendants. But, the majority of us continue to go about their business as usual. Unless the elite of the nation – including students of universities – participate in saving the Earth, the general public won't be sufficiently motivated to adopt conservation values and lead a sustainable way of life, and we will be destined for disaster.

Cooperation among religious leaders, scientists and environmental activists is absolutely required to avoid environmental catastrophes due to climate change and other impacts of environmental deterioration. As scientists, we will provide the understanding – by conducting the present study, among others - of how ecosystems work and the impacts of our actions on them as well mankind's role as part of the ecosystem. This is where the significance of this study probably lies.

1.5. Limitation of the Study

Language is characterized as a tri-stratal semiotic system, involving a strata of meanings, a strata of "wordings", and a strata of sounds/orthography. Associated with each of the stratum of language is a unit of analysis or description. This is the unit identified by linguists as carrying the major patterns at that level. Thus, when we analyze phonology, the main unit we focus on is the phoneme; with lexico-grammar, the unit is the clause; and with the discourse semantics, the unit is the text. This study is limited to the analysis which is focusing on the lexico grammar and thus the unit of analysis will be clause.

When we ask what a text means, we will find that we can identify three strands of meanings running throughout the text: experiential meaning, the interpersonal meaning, and the textual meaning. This study is limited to analyze only the experiential meaning.

1.6 Organization of the Project

This final project is formulated in five chapters. Chapter 1 covers Introduction, Statement of the problem, Objectives of the study, Reason for choosing the problem, Significance of the study and Formulation of the project.

Chapter 2 includes the review of related literature. It discusses Systemic Functional Linguistics as the big umbrella for the sub-theories I would like to refer to.

Among those sub-theories are register theory, semiotics, genre, and the grammar of experiential, interpersonal and textual meanings.

Chapter 3 comprises the method of investigation. It discusses the nature of this study, the data collection and the analysis procedure.

Chapter 4 is discussing the findings of this study. Each of the two research questions will be answered here.

Chapter 5 is the conclusion and the pedagogical implication of this study toward English language teaching.

CHAPTER II

REVIEW OF RELATED LITERATURE

This chapter discusses the theoretical study, the previous studies and the theoretical framework to be used to analyze the data of this study.

2.1 Theoretical Study

The systemic functional approach is increasingly being recognized as providing a very useful descriptive and interpretive framework for viewing language as a strategic, meaning-making resource. Michael Halliday, the linguist most responsible for the development of systemic linguistics, prefaces his 1985 systemic description of English grammar with an open-ended list of twenty-one possible application of systemic theory (Halliday 1985a).

While individual scholars naturally have different research emphases or application contexts, common to all the systemic linguists is an interest in how people use language with each other in accomplishing everyday social life. This interest leads systemic linguists to advance four main theoretical claims about language: that language use is functional; that the function is to make meanings; that these meanings are influenced by the social and cultural contexts in which they are exchanged; and that the process of using language is a semiotic process, a process of making meanings by choosing (Eggins, 1994:2)

These four points, that language use is functional, semantic, contextual, and semiotic, can be summarized by describing the systemic approach as a *functional-semantic* approach to language.

2.1.1 A Functional-Semantic Approach to Language

The systemic approach to language is functional in two main respects: (1) because it asks functional questions about language: systemic ask how do people use language?; (2) because it interprets the linguistic system functionally: systemicists ask how is language structured for use?

Answering the first question involves a focus on authentic, everyday social interaction. This analysis of text leads systemicists to suggest that people negotiate text (write or talk language) in order to make meanings with each other. In other words, the general function of language is semantic one.

Reinterpreting the functional questions semantically, then, systemic ask: (1) Can we differentiate between types of meaning in language? i.e. **how many different sorts of meanings do we use language to make?;** (2) How are texts (and the other linguistics units which make them up, such as sentences or clauses) structured so that meanings can be made? i.e how is language organized to make meaning?

Halliday (e.g. 1985a, 1985b) has argued that language is structured to make three main kinds of meanings simultaneously. This semantic complexity, which allows

experiential, interpersonal, and textual meanings to be fused together in linguistic units, is possible because language is a semiotic system: a conventionalized coding system, organized as sets of choices. The distinctive feature of semiotic systems is that each choice in the system acquires its meanings against the background of the other choices which could have been made. This semiotic interpretation of the system of language allows us to consider the appropriacy or inappropriacy of different linguistic choices in relation to their contexts of use, and to view language as a resource which we use by choosing to make meanings in contexts.

2.1.2 Language and Context

Our ability to deduce context from text is one way in which language and context are interrelated. Our equally highly developed ability to predict language from context provides further evidence of the language/context relationship. In our ability to predict accurately what language will be appropriate in a specific context, we are seeing an extension of our intuitive understanding that language use is sensitive to context.

Final evidence which emphasizes the close link between context and language is that it is often simply not possible to tell how people are using language if you do not take into account the context of use. Considered in its textual context (as a part of a complete linguistic even), a sentence clearly did have a function (to propose a

possible solution). Taken out of context, its purpose is obscured, with at least part of its meaning lost or unavailable.

Our ability to deduce context from text, to predict when and how language use will vary, and the ambiguity of language removed from its context, all provide evidence than in asking functional questions about language we must focus not just on language, but on language use in context. Describing the impact of the context on text has involved systemicists in exploring both what dimensions, and in what ways, context influences language.

Questions such as "exactly what dimensions of context have an impact on language use" and which aspects of language use appear to be affected by particular dimensions of the context" are explored within systemics through genre and register theory. Register theory describes then impact of dimensions of the immediate context of situation of a language event on the way language is used. Three key dimensions of the situations are identified as having significant and predictable impacts on language use. These three dimensions, the register variables of mode (amount of feedback and role of language), tenor (role relations of power and solidarity) and field (topic or focus of the activity), are used to explain our intuitive understanding that we will not use language in the same way to write as to speak (mode variation), to talk to our boss as to talk to our lover (tenor variation) and to talk about linguistics as to talk about jogging (field variation).

The concept of genre is used to describe the impact of the context of culture on language, by exploring the staged, step-by-step structure cultures institutionalize as ways of achieving goals.

A higher level of context to which increasing attention is being given within systemic linguistics is the level of ideology. Whatever genre we are involved in, and whatever the register of the situation, our use of language will also be influenced by our ideological positions: the values we hold (consciously or unconsciously), the biases and perspectives we adopt.

Just as no text can be "free" of context (register or genre), so no text is free of ideology. In other words, to use language at all is to use it to encode particular positions, beliefs, biases, etc. However, for reasons which are themselves ideological, most language users have not been educated to identify ideology in text, but rather to "read" text as natural, inevitable representations of reality.

The implication of identifying ideology in text is that as readers of texts, we need to develop skills to be able to make explicit the ideological positions encoded, perhaps in order to resist or challenge them. This means we need way of talking about how language is not just representing but actively constructing our view of the world. This *semiotic* approach to language explore more fully below.

2.1.3 How is Language Structured for Use?

Systemic linguistics does not only ask functional questions about how people are using language, but it also interprets the linguistic system itself from a functional-semantic perspective. How language is used in authentic texts, **how is language structured for use?**

Language users do not interact in order to exchange sounds with each other, nor even exchange words or sentences. People interact in order to make meanings: to make sense of the world and of each other. The overall purposes of language, then, can be described as a semantic one, and each text we participate in is record of the meanings that have been made in a particular context.

The choice of the word "meaning" in the last sentence is a significant one, for systemic analysis seeks to demonstrate that linguistics texts are typically making not just one, but a number of meanings simultaneously.

It is certainly the case that the text is making this kind of "real world" or experiential meaning. However, at the same time that it is making this strand of experiential meaning, the text is also making some other equally important meanings.

The text is, for example, making interpersonal meaning. There is a strand of meaning running throughout the text which expresses the writer's role relationship with the reader, and the writer's attitude towards the subject matter.

Finally, while expressing both experiential and interpersonal meaning, a text also makes what we describe as textual meaning. Textual meaning refers to the way the text is organized as a piece of writing (or speech).

This example demonstrates that a text can be seen to be expressing more than one meaning at a time. In fact, Halliday claims that a text can make these different meanings because units of language (e.g. texts, sentences, clauses, etc.) are simultaneously making *three* kinds of meanings. These three types of meaning are expresse3d through language because these are the strands of meaning we need to make in order to make sense of each other and the world.

As the above discussion of Text 1 indicated, **experiential meanings** are meanings about how we represent experience in language. Whatever use we put language to, we are always talking about something or someone doing something.

Simultaneously, we use language to make **interpersonal meanings**: meanings about our role relationship with other people and our attitude top each other. Whatever we put language to we are always expressing an attitude and taking up a role.

Finally, in any linguistic event we are always making **textual meanings**: meanings about how what we're saying hangs together and relates to what was said before and to the context around us. Whatever use we put language to we are always organizing our information.

At both a macro (text) and micro (sentence) level, then, it is possible to identify these three different types of meanings being made – and, most significantly, being

made simultaneously. This leads us to ask: how? How can language accomplish this semantic complexity? Answering this question takes into an exploration of language as a semiotic system.

2.1.4 Meanings as Choice: Semiotic Systems

A classic demonstration of a simple semiotic system is that of traffic lights. A system has the following basic attributes: (1) it consists of a finite set of choices or oppositions: this system contains only three choices, since the traffic lights can only be either red or green or amber; (2) the choices in the system are discrete: when you drive up to the intersection, the lights can only be one color at a time; and it is the oppositions, not the substance, in the system that are important: it does not matter exactly what shades or red or green or amber we use (deep red/light red, light green/dark green). All that matters is, that red is not green – that each of the three colored lights is different from each other.

To construct the semiotic system, we need to observe that each colored light triggers different behaviors in the drivers who arrive at the intersection. When the light is red, drivers stop, when the light is green, they go, and when the light is amber, they prepare to stop.

It is the ability to regulate drivers' behaviors that is what traffic lights are really all about. They are not provided merely to beautify the urban environment, but to act as signs which stand for a way to behave. A red light does not just mean "here is s red

light"; it means "stop now". In other words, the colored lights are operating as part of a sign system, whereby the color of the light is encoding, or expressing, which action from a set of possible "behaviors at traffic lights" should be performed.

In summary, then, a semiotic system can be defined as a finite collection of discrete signs. We have a sign when a meaning (content) is arbitrarily realized through a representation (expression).

Two-level semiotic systems such as traffic lights, with the conventional pairing of a representation with a meaning, are surprisingly common in social life. One obvious example is that of clothing (or, to use the label more indicative of its semiotic function, *fashion*). Originally, back in the cave for example, clothing would have been adopted for very practical reasons: to keep people warm, to protect vulnerable parts of the body. And the choice of materials out of which clothes could be made would have been largely determined by practicalities: what was to hand, what could be caught and skinned, etc.

But very rapidly clothing went beyond its survival value, and acquired a semiotic value in our culture. For example, some clothing has acquired meaning as "male" or "female" (e.g. trousers vs. skirts); some clothing has acquired meaning as "at home" clothes vs. "going out" clothes (e.g. suits vs. jeans); some clothing has acquired meaning as "dependent" vs. "independent" (e.g. schools and institutions that make their adherents wear uniforms vs. situations offering choice in clothes); some clothing has acquired meaning as "professional class" vs. "working class" (e.g. a white coat vs. a boilersuit).

Sometimes it is a particular combination of items of clothing that carries meaning, such as a suit with a white shirt, silk tie, shiny patent leather shoes, etc. At other times, individual items of clothing can carry very significant social meaning: for example, the doctor's white coat, which signifies the wearer to be professional, expert, careful, trustworthy.

What we see with clothing is that what began as a "natural" system has been developed by convention (in other words, by the consciousness agreement and enactment of us all) into a very potent semiotic system. If you ever doubt its potency, just think about the strong social expectations (which you most probably share) about how one should dress to go for a job interview – if one wants to get the job.

The clothing example may suggest to you other ways in which we live in a semiotic world. For example, the cars people drive, the layout of the houses the live in, the magazines they buy, the cigarettes they smoke: wherever people have the possibility of choice, there we tend to find the potential for semiotic systems, as the choices we make are invested with meaning.

2.1.5 Language as a Semiotic System

By far, however, the most sophisticated and elaborate of all our semiotic systems is the system of language. What gives language its privileged status as a semiotic system that other semiotic systems can generally be translated into language. While

we can use language to talk about the semiotic systems of clothing or cars, we cannot use clothing or cars to make all the meanings language makes.

Language achieves this special status because it is a more complex semiotic system than the two-level kind we found in the traffic lights. However, just like the traffic lights, language can be described as a semiotic system because it involves sets of meaningful choices or oppositions.

We can describe the lexical items in a language (the vocabulary) as semiotic systems. Identifying systems of lexical choice involves recognizing that the words encode meaningful oppositions, and that the process of choosing a lexical item is a semiotic process.

Just as with the traffic lights system, so with the lexical systems we find that the relationship between a human infant of unspecified sex and the sound sequence *k-i-d* is an arbitrary one. This arbitrariness of the content/expression pair is easily demonstrated by noting that other languages will use different sounds to refer to their human infants.

However, there is a critical difference between language as a semiotic system and a simple semiotic system such as the traffic lights. For, with our lexical system, we can break down our lexical items into component sounds. Thus, the word *kid* is itself realized by a combination of the sounds k-i-d. Note that with the traffic lights we could not break down the colored lights into any smaller components. The colored lights directly realized the contents of our sign system. However, with language, the

realization of the meaning "progeny no sex specified" is mediated through a word, itself realizing a sequence of sounds.

2.1.6 The Function of Language as a Semiotic System

Not only do linguistic systems look quite similar to other kinds of semiotic systems, but they also function to do the same thing. Like the traffic lights, linguistic systems are also systems for making meanings. And, like the traffic lights, linguistic systems make meanings by ordering the world for us in two ways.

First, they order **content**: of all the ways of talking about human offspring, our simple lexical systems above show us that English speakers organize this conceptual domain by recognizing sex of child and parental attitude as (two of the) relevant dimension of contrast. That these dimensions are considered relevant is established not by nature but by convention. The system of choice which opposes brat, child, and darling both recognizes, and validates, the right of parents to express attitudes about their offspring. We do not have in English lexical items which contrast offspring in terms of the offspring's attitude towards parent (e.g. we do not have words for "a child who loves his parents" vs. "a child who can't stand his parents vs. "a child who is ambivalent about his parents"). Although such a contrast is linguistically perfectly feasible (we just need to think of three words to use), it is not culturally feasible, because it is not judged appropriate for the powerless (i.e. children) to express attitude about the powerful (i.e. parents).

The second way in which linguistic signs order the world for us is by ordering **expression**. Thus, of all the possible sounds we are physiologically capable of producing, English recognizes only about thirty or so as being meaningfully distinct. For example, the difference between pronouncing the *k* in *kid* with little or no release of air (i.e. unaspirated) or pronouncing it with a rush of air (i.e. aspirated) is not a meaningful difference in English (we will hear the two versions as meaning the same thing). However, the difference between *kid* (where the final sound is produced by vibrating the vocal chords i.e. it is voiced) and *kit* (where the final sound is produced without vibrating the vocal chords, i. voiceless) is a significant difference to English speakers, since it serves to differentiate between two different meanings. The fact that language divide up the spectrum of possible sounds or expressions (the phonetic space) differently is brought home to you when you try to learn a foreign language. You will find that the inventory of meaningful sounds will be different for each language.

2.1.7 Grammatical Systems in Language

Systems of lexical choice are not the only kind of system we find in language. We also have systems of grammatical choice (see System 1.5).

declarative

(statement)

Subject ^Finite verb^Predicate

clause interrogative

(question)

Finite verb^Subject^Predicate

imperative

(command)

no Subject, no Finite

System 1.1 Grammatical choice (Eggins, 1994: 20)

This system says that whenever I produce a clause it must be

- a declarative The baby is crying

- an interrogative Is the baby crying?

Or

- an imperative Cry!

Note how the opposition, or the choices, in this kind of system are realized. Each choice is realized by a particular sequencing of a number of grammatical elements, here the elements of **Subject**, **Finite** and **Predicator**. The system says that the choice "declarative", for example, is realized by the sequence of elements: **Subject** followed by **Finite** verb. For example, *The baby* (Subject) *is* (Finite verb) *crying* (Predicator),

whereas the choice "interrogative" has the elements of Subject and Finite in the opposite order: *Is the baby crying?* The imperative is realized by the omission of the Subject and Finite elements, leaving only the Predicator: *Cry!*

In grammatical system, then, each choice gets realized not as particular words (you could change all the words to *my dog, was barking* and still have the opposition), but in the order and arrangement of the grammatical roles the words are playing. That is, these choices are realized by structures. The choice from a grammatical system is represented through the presence and ordering of particular grammatical elements. And of course these structures will eventually get realized as words, and then finally as sounds.

In order to incorporate these types of linguistic systems, our model of language as a semiotic system now appears in Figure 2.

	Folk Names	Technical Terms
CONTENT	Meanings	(discourse-) Semantic
	Wordings (words & structures)	Lexico-grammar
EXPRESSION	Sounds/letters	Phonology/ Graphology

Figure 2. Levels or strata of language (Eggins, 1994)

This diagram presents the systemic model of the levels or strata of language, using on the left the "folk" or non-technical terms, and on the right the technical terms that we will use from now on.

The diagram can be read as saying that in language, meanings are realized as wordings, which are in turn realized by sounds (or letters). Technically: **discourse-semantics** gets realized through the **lexico-grammar**, which in turn gets realized through the **phonology** or **graphology**.

When we compare this model of language with our traffic lights, we see that language is a different kind of semiotic system **because it has three levels**, not just two. That is, language has two meaning-making levels, an upper level of content known as **discourse semantics**, and an intermediate level of content known as **lexico-grammar**.

2.1.8 Implications of a Tri-stratal Semiotic Model of Language

Having sketched out a model of language as semiotic system, it is now possible to link this back to our earlier question: how does language manage to make three kinds of meanings simultaneously?

Comparing the traffic lights and language, you will see that what makes language different is that it possesses an intermediate encoding level of lexico-grammar. It is this lexico-grammatical level that is particularly important in understanding how language is able to make three types of meaning simultaneously.

The three strands of meanings that run through any text get "into" the text largely through the clauses which make it up. Thus, as Halliday (1985: xvii) points out, grammatical description is essential to text analysis.

> It is sometimes assumed that (discourse analysis, or 'text linguistics') can be carried out without grammar – or even that it is somehow an alternative to grammar. But this is an illusion. A discourse analysis that is not based on grammar is not an analysis at all, but simply a running commentary on a text (Halliday, 1985: xvii).

The notion of the semiotic system also gives a powerful way of interpreting language behavior as choice. If language is a semiotic system, then the process of language use is a process of making meanings by choosing. In making a choice from a linguistic system, what someone writes or says gets its meaning by being (interpreted) against the background of what could have been meant (said or written) in that context but was not. Through this distinction we relate what people did do or did say on any particular occasion (their **actual** linguistic choice) to what they could have done or could have said (their **potential** linguistic choices).

In a functional-semantic approach, then, we are concerned to describe two dimensions of language use. First, what are the possible choices people can make, i.e. what are the possible meanings they could make? In doing this we describe the linguistic system. Secondly, what is the function of the choice they did make, i.e. why did they choose to make that meaning? In doing this we describe how language is used in different social context, to achieve various cultural goals. It enables us to talk about linguistic choices not as "right" or "wrong", as in the traditional prescriptive

approach to language. Instead, we talk about choices as “appropriate” or “inappropriate” to particular context.

Referring the above description it is reasonable to argue that systemic linguistics has been described as a functional-semantic approach to language which explores both how people use language in different contexts, and how language is structured for use as a semiotic system. As a linguistic approach to meaning in texts, systemic linguistics has (or has not) common ground with text grammarians and discourse analysis from a range of perspectives.

2.1.9 Characterizing Language

Gerot and Wignell (1994: 4-7) point out that there are a number of grammars which differ in how they characterize language, depending on the purposes of the user. How people have characterized wordings, that is, devised theories of grammar, depends on the kinds of questions they have asked about language, on what they want to find out about it.

Theories of language or grammar are not inherently good or bad, right or wrong, true or false. Rather, grammars are validated by their usefulness in describing and explaining the phenomenon called language.

As teachers, we can further ask whether the grammar helps learners and their teachers to understand and produce texts. As discourse analysts, we can ask how the grammar sheds light on how texts make meaning.

There are three grammars which have had a major influence on schools in the western world in this century.

2.1.10 Traditional Grammar

Traditional grammar aims to describe the grammar of standard English by comparing it with Latin. As such, it is prescriptive. Students learn the names of parts of speech (nouns, verbs, prepositions, adverbs, adjectives), parse textbook sentences and learn to correct so called bad grammar.

Traditional grammar focuses on rules for producing correct sentences. In so doing, it has two main weaknesses. Firstly, the rules it prescribes are based on the language of a very small group of middle-class English speakers. Thus it can be used to discriminate against the language of working class, Immigrant and Aboriginal students. Secondly, the rules deal only with the most superficial aspects of writing.

2.1.11 Formal Grammar

Formal grammars are concerned to described the structured of individual sentences. Such grammars view language as a set of rules which allow or disallow certain sentence structures. ‘How is this sentences structured?’ Meaning is typically shunted off into the too-hard box.

2.1.12 Functional Grammar

Functional grammars view language as a resource for making meaning. These grammars attempt to describe language in actual use and so focus on texts and their contexts. They are concerned not only with the structures but also with how those structures construct meaning. Functional grammars start with the question, 'How are the meanings of this text realized?'

Traditional and formal grammars would analyse our earlier clause as follows:

Time	**flies**	**like an arrow**
Noun	*verb*	*prepositional phrase*
Tim	**told**	**of a tragic case**

Systemic-functional grammar, on the other hand, labels elements of the clause in terms of the function each is playing in that clause rather than by word class.

Time	**flies**	**like an arrow**
Participant: Actor	Process: Material	Circumstance: Manner

Tim	**told**	**of a tragic case**
Participants: Sayer	Process: Verbal	Circumstance: Matter

In these last two clauses, the participant ('doer') roles are *realized* by nouns, the Processes ('doing') by verbs and the Circumstances by prepositional phrases. But 'flying' and 'telling' are two quite different orders of 'doing'. And in the above clause 'like an arrow' tells how time flies, while 'of a tragic case' tells what Tim was talking about

Words class labels are certainly not useless, but they will only take you so far. They do not account for differences or similarities in meaning to any extent.

To sum up the main differences in perspective among the above three grammars, the following table is presented.

Formal (+Traditional)		**Functional**
Primary concern	How is (should) this sentence be structured?	How are the meanings of this text realized
Unit of analysis	Sentence	Whole texts
Language level of concern	Syntax	Semantics
language	= a set of rules for sentence construction = something we know	= a resource for making meaning = something we do

Figure 2.1 Perspective of three grammar (Linda Gerot and Peter Wignel: 7)

So we shall talk about the clause as representation. Through the system of transitivity, we shall be exploring the clause in its who=does=what=to=whom, who/what=is=what/who, when, where, why, or how function! There are, in fact, three semantic categories which explain in a general way how phenomena of the real world are represented as linguistic structures. These are Circumstances, Process and Participants. Circumstances answer such questions as when, where, why, how, how many and as what. Process are central to Transitivity. Participants and Circumstances are incumbent upon the doings, happenings, feelings and beings. This suggests that there different kinds of goings on, which necessarily involve different kinds of Participants in varying Circumstances.

There are indeed seven different Process types identified by Halliday: Material, Behavioural, Mental, Verbal, Relational, Existential, Meteorological. Processes are realized by verbs. Traditionally verbs have been defined as “doing words”. But some verbs are not doing words at all, but rather express states of being or having. Moreover, there are different orders of doings and beings. For example, to *write* a funny story, to *tell* a funny story and to *hear* a funny story is three different orders of meaning. Just as there are different orders of doing, there are different orders of being.

Material processes

Suzzane Eggins (1994) discussed in length the process types mentioned above. She pointed out that Material processes are Processes of material doing. They express the notion that some entity physically does something – which may be done to some other entity. So clauses with a Material Process obligatorily have a doing (Process) and a doer (Participant). So, material process are processes about doing, about action. Actions involve actors, or participants. Participants are realized by nominal groups. We can make an important distinction between the number of participants involved in the process:

Diana went to Geneva

Diana stayed up all night

In these examples we see that there is only one participant, one Actor or one person doing the action (*Diana*) in these clause. But not all material processes have to involve only one participant:

Diana had donated *blood* 36 times.

The Swiss men left *their dinner*

They gave *Diana* a cognac

As these examples show, while some material processes involve one participant only, others involve two, or even three. So, we can make a distinction between:

1. Processes in which there's only one participant: these processes are called middle, or intransitive. These are clauses in which "someone does something", and are probed by asking "what did x do?"
2. Processes in which there are two (or more) participants: these are called effective or transitive. These are clauses which "someone does something and the doing involves another entity". Transitive clauses are probed by "what did x do to y?"

Some effective or transitive processes (e.g. *give)* seem obligatory to involve three participants. They are probed by "what did x do to y to z?" Effective clauses can be either active or passive.

1. Active: probed by: what did x do (to y)?

   They tested my blood

   She carried the bomb

2. Passive: probed by: what happen to y? With the passive we can ask "WHO BY?"

   My blood was tested (by them)

   The bomb was carried onto the plane (by her)

The difference between active and passive clauses relates to whether the Actor role (the doer of the action) is conflated with the Mood function of Subject or not. In the active, the roles of Actor and Subject are mapped on to the same constituent. In the passive, however, the Subject is not also the Actor.

The two frequent participants in material process clauses are the Actor and the Goal. The Actor is the constituent of the clause who does the deed or performs the action. When the clause only has one participant and is active, the participant will be ACTOR.

iana	*Went*	*to Geneva*
Actor	Process:material	

So	*You*	*walk round*	*weak-kneed for 3 days*
	Actor	Process:material	

The Goal is that participant at whom the process is directed, to whom the action is extended. It is the participant treated in traditional grammar as the Direct Object, and it usually maps on to the Complement participant in the Mood analysis. The Goal is usually

What becomes Subject in the passive.

They	*Avoided*	*the scar tissue*
Actor	Process:material	Goal

There can only be one Goal per clause.

In the passive, the Goal becomes the Subject, and the Actor may be omitted.

active

They	*Tested*	*My blood*	*Against the donors'*
Actor	Process:material	Goal	

passive

My blood	*Was tested*	*against the donors'*	*(by them)*
Goal	Process:material		(Actor)

active

She	*Carried*	*the bomb*	*onto the plane*
Actor	Process:material	Goal	

passive

The bomb	*Was carried*	*Onto the plane*	*(by her)*
Goal	Process:material		(Actor)

Halliday (1985: 134-7) makes an important, if sometimes difficult, distinction between a Goal and a related participant called a Range. Consider the following clauses:

They did the transfusion.

They transfused the blood.

These are processes of doing, and so we classify them as Material processes. Each involves two participants, but while *they* is clearly the Actor in both, the question is: what label should we attach to the second participant: *the transfusion, the blood?* While we might initially assume these participants should be called Goals, there is a problem in that they are not probed using the Goal probe of "What did x do to y?"

For example, it makes no sense to ask "What did they do to the transfusion?", because the answer "They did it" is redundant. Hence, in this case although we appear to have a separate participant (*transfusion*), it seems to be very closely tied to the verb: in *doing the transfusion* only one action took place. Similarly, if we probe the second example with: "What did they transfuse?", the answer must most certainly be "the blood", because that is about the only thing that can be transfused.

Hence, in these two cases, there seems to be a closer relationship between the Process and the second participant than we found above between a Process and a Goal. Halliday calls these less independent participant Ranges, and he suggests that a Range specifies one of two things:

1. either it is a restatement or continuation of the process itself, or
2. it expresses the extent or "range" of the process.

Examples of Ranges which express the process itself include:

They	*Ran*	*the race*
Actor	Pr:material	Range

Where race is really a restatement of the process run. You cannot have races unless you run them. So really the two participants are saying the same thing. Verbs like this canm usually be collapsed into one single process: e.g. raced.

Other examples of process Ranges are what are called in traditional grammar cognate objects: for example, do a dance, sing a song … Here the object of the verb is derived directly from the verbal meaning itself, and again we can typically substitute just one verbal element: dance, sing..

The second type of Range is not cognate, but expresses the domain or extent of the process. For example:

They	*were playing*	*bridge/tennis/a game*
Actor	Pr:material	Range/Range/Range

Halliday argues that constituents like bridge or tennis or game are not fully autonomous participants, since these games do not exist without the playing. They are just continuations of the process, expressing its range or domain. In these cases it is fairly easy to see that they are not Goals because they do not exist except through the

process. The Range is really just another name for the process itself. Less obvious, but similar, Ranges occur in:

Have	*You*	*Given*	*blood*	*before?*
	Actor	Pr:material	Goal	

Mark	*Served*	*the dinner*
Actor	Pr:material	Range

Although *blood* and *dinner* exist independently of the process, we still find it hard to probe these participants with DO TO or DO WITH. The second participant is just specifying the range or domain of process.

A third type of Range is that created by the use of dummy verbs, like *do, have, give, take, make*:

You	*Just*	*Give*	*me*	*a whistle*
Actor		Pr:material		Range

Give	a smile
Pr:material	Range

Have	*a bath*
Make	*a mistake*
Take	*a look*
Pr:material	Range

This is quite a common pattern in English, whereby the verb is emptied of its content, and the meaning expressed through the nominal Range constituent.

While it is not always easy to distinguish Goals from Range, Halliday (1985a: 136) list a number of tests which can be applied:

1. If the participant is a Range, you cannot (sensibly) probe with "what did x do to y?" Ranges cannot usually be probed by DO TO or DO WITH, whereas Goals can.
2. A Range cannot be a personal pronoun.
3. A Range cannot be modified by a possessive (e.g. *Just give me your whistle).
4. Ranges are less likely to become Subject than Goals. They often sound quite odd as Subjects: e.g. *The whistle wasn't given by you, was it? The blood was given by you, wasn't it?*
5. A Range can often be realized as a prepositional phrases:

   I'm playing bridge *I'm playing Simon <u>at bridge</u>*

He plays the piano *He plays beautifully <u>on the piano</u>*

He does great whistle *He does great <u>at whistling</u>*

Ranges using "dummy verbs" can be "collapsed" into one verb e.g.

give a whistle –whistle

do a dance – dance

give a lecture – lecture

Ranges cannot take attributes of result: i.e. an element which gives the outcome of the process:

She	*Cooked*	*dinner*	*to perfection/to a turn*
Actor	Pr:material	Goal	Resultative attribute

But not

**She*	*Served*	*dinner*	*to perfection/to a turn*
	Pr:material	Goal	Resultative attribute

While it is not always easy to distinguish a Range from a Goal, the following examples may help to emphasize the distinction:

RANGE	GOAL
shoot a gun	shoot a kangaroo
kick a goal	kick the dog
serve dinner	serve the ball
give a smile	give a present
make a mistake	make a cake
take a bath	take a biscuit

Beneficiary

One further participant which may occur in a material process clause is the Beneficiary. Consider the clauses:

But in Switzerland they give you a cognac

They gave blood to my daughter

These clauses involve three participants, and in each case there is one participant who in some way could be said to benefit from the process: *you, my daughter*. Participants which benefit from the process are called Beneficiary.

There are two kinds of Beneficiary: a Recipient **(**the one for whom something is done). Both Clients and Recipients may occur with or without prepositions, depending on their position in the clause. If you want to put them in final position in the clause, then it is necessary to use a preposition. For example:

-RECIPIENT: the one goods are given to

But	*in Switzerland*	*They*	*give*	*you*	*a cognac*
		Actor	Pre:material	Recipient	Goal

But	*in Switzerland*	*They*	*give*	*a cognac*	*to you*
		Actor	Pr:material	Goal	Recipient

Note that it is possible to get the Recipient as Subject of the clause, those giving another variety of passive:

In Switzerland	*You*	*Are*	*given*	*a cognac*
Adj:circ	Subject	Finite	Predicator	Complement
RESIDUE…	MOOD		... RESIDUE	
	Recipient		Pr:material	Goal

Compare these two versions of the passive:

-Recipient-passive

My daughter	*Was*	*Given*	*blood*
Subject	Finite	Predicator	Complement
MOOD		RESIDUE	
Recipient		Pre:material	Range

-Range-passive

Blood	*Was*	*Given*	*to my daughter*
Subject	Finite	Predicator	Adj:circ
MOOD		RESIDUE	
Range		Pr:material	Recipient

The constituent playing the Client role (the one the service is done for) may also appear with or without a preposition.

I	*'ll heat*	*You*	*up*	*some soup*
Actor	Pr:material…	Client	…Process	Goal

I	*'ll heat up*	*some soup*	*for you*

Actor	Pr:material…	Goal	Client

Although less frequent than Recipient-passives, some Client-passives do occur:

Mark	*Cooked*	*dinner*	*for them all*
Actor	Pr:material	Goal	Client

Mark	*Cooked*	*them all*	*dinner*
Actor	Pr:material	Client	Goal

They	*Were*	*all*	*Cooked*	*dinner*	*for*	*By Mark*
Client…		…Client	Pr:material	Goal		Actor

but not:

******You will be heated up some soup for.*

Circumstances

The last type of participant we need to look at for material process clauses is that of Circumstances, which are realized by adverbial groups or prepositional phrases. Circumstances can occur not only with material processes, but also with all process types. They are presented here for convenience. System 1.2 indicates the different types of Circumstances we can find in clauses.

circumstance	Extent	duration (temporal)
		distance (spatial)
	Cause	time (temporal)
	Location	place (spatial)
	Matter	means
	Manner	quality
		comparison
	Role	reason
	Accompaniment	purpose
		behalf

System 1.2 System of circumstance (Suzanne Eggins, 1994:237)

Circumstantials can best be identified by considering what probe is used to elicit them:

1)**extent** HOW LONG? (duration); HOW FAR? (spatial distance)

I'	*ve given*	*blood*	*36 times*
Actor	Pr:material	Goal	Circ:extent

I	*stayed up*	*all night*
Actor	Pr:material	Circ:extent

2)**location** WHEN? (temporal); WHERE? (spatial)

They	*rang*	*Me*	*up*	*on the Saturday night*
Actor	Pr;material	Beneficiary	Pr:material	Circ:location

I	*Delivered*	*it*	*to the clinic where she was*
Actor	Pr:material	Goal	Circ:location

3)**manner** HOW? WITH WHAT? (means); HOW? HOW – ly? (quality); WHAT …LIKE? (comparing).

So	*they*	*Did*	*the transfusion*	*through the*

				umbilical artery
	Actor	Pr:material	Range	Circ:manner

In Switzerland	*unlike Greece,*	*they*	*give*	*you*	*a cognac*
Circ:location	Circ:manner	Actor	Pr:material	Beneficiary	Goal

4)**cause** WHY? (cause); WHAT FOR?(reason); WHO FOR?(behalf)

My daughter	*Survived*	*thanks to the two Swiss men*
Actor	Pr:material	Circ:cause

She	*Carried*	*the bomb*	*for her boy friend*
Actor	Pr:material	Goal	Cir:cause

5)**accompaniment** WITH WHOM?

She	*got*	*on the plane*	*with/without her boyfriend*
Actor	Pr:material	Circ:loc	Circ:accompaniment

6)**matter** WHAT ABOUT?

As for Greece,	*they*	*Give*	*you*	*nothing*
Circ:matter	Actor	Pr:material	Beneficiary	Goal

7)**role** WHAT AS?

She	*was traveling*	*to Israel*	*as a tourist*
Actor	Pr:material	Circ:location	Circ:role

Causative constructions

In the description presented so far, we have seen that the role of Actor is that of the doer, the one who does or undertakes the action. It is also useful to identify the clausal participant of Agent: the one who INITIATES the action, the one who makes something happen. Typically the two roles of Agent and Actor are mapped onto the same constituent, since the Actor is the one who makes the actions happen, and is therefore also the Agent:

1.Non-causative**:** girlfriend = doer (Actor) + iniator (Agent)

His girlfriend	*Carried*	*the bomb*	*onto the plane*
Actor	Pr:material	Goal	Circ:loc

However, in causative constructions, the Agent is distinct from the Actor, with the Agent causing an Actor other than himself/herself to carry out the action. This usually involves using the causative process *make*.

2.Causative:

He	*Made*	*his girlfriend*	*carry*	*the bomb*	*Onto the plane*
Agent	Pr:causative	Actor	Pr:material	Goal	Circ:loc

They	*make*	*You*	*fill in*	*forms*
Agent	Pr:causative	Actor	Pr:material	Range

As a general rule, the role of Agent will not be shown unless the clause is causative. Otherwise the single label of Actor can be used.

Mental Process

Consider the following clauses:

I hate injections

She believed his excuses

I don't understand her letter

I don't know his name

They don't give a shit about it

From the clauses such as these, we see that people are not always talking about concrete process of doing. We very often talk not about what we are doing, but about what we think or feel. Halliday calls processes which encode meanings of thinking or feeling **mental processes**.

We can recognize that these are different from material processes because it no longer makes sense to talk "What did x do to y?"

What did you do to the injection? I hated it.

What did she do to his excuses? She believed them.

What don't I do to her behavior? I don't understand it.

With these clauses, it makes more sense to ask: "what do you think/feel/know about x?"

- *What do you think about injections? I hate them.*
- *What did she think about his excuses? She believed them.*

One thing, then, that makes mental processes look different from material s is that we probe them differently. When we probe, we find we are not asking about actions or doings in a tangible, physical sense; but about mental reactions: about thoughts, feelings, perceptions.

Halliday divides mental process verbs into three classes: cognitive (verbs of thinking, knowing, understanding, for example *I don't know her name*), affection (verbs of liking, fearing, e.g. *I hate injections*), and perceptions (verbs of seeing, hearing, e.g. *Simon heard it on the news*).

The difference between the way we probe material and mental processes is one semantic reason for differentiating them. However, the main reasons why we want a different analysis are that mental processes behave differently grammatically from material processes in a number of ways, enumerated below.

1) Choices of unmarked present tense Halliday notes that one significant difference between mental and material processes is in their unmarked present tense. In a mental process, the unmarked present tense is the simple present:

I hate injections Simon loves the soup She knows his name

But in material processes, the unmarked present tense is the present continuous (the ing-form).

Mark is heating the soup up

Diana is donating the blood because of her experience in Geneva

We only use the simple present with material processes if we wish to convey a special, marked meaning of habitual action:

Mark heats the soup up (everyday)

Diana donates blood (every year)

This does not mean that mental processes never occur in the present continous, or materials in the simple present. But there is a clear unmarked correlation which differentiates the two process types. The choice of another, marked present tense form carries an "extra" dimension of meaning. In fact there is a general association of mental processes with non-continuous tense. Even in the past tense it is much more common to get:

She believed his excuses (simple past)

than

She was believing his excuse.

But it is in the present that the contrast is most marked.

2)Number of participants while material processes could have either one or two participants (i.e. they could be either middle or effective in voice), mental processes must always have two participants (except for the situation of projection). There will always be two nominal-type participants associated with any mental process. Even if one participant is apparently absent, it will need to be retrieved from the context for the clause to make sense:

e.g. *She believed*. always implies *She believed something or someone*.

There is, then, no such thing as an intransitive mental process. All mental processes have two participants. This raises the question of what labels we should use for the participants in in a mental process clause. One option is to keep using the labels of Actor, Goal, etc. that we identified for material processes. However, this recycling is rejected for two reasons:

a) firstly, since material processes are not probed as action processes, roles like Actor do not seem appropriate;
b) secondly, different things can get to be participants in mental processes than in material process clauses.

This brings us to the third major difference between mental and material processes.

3) Nature of the active participant one participant in the mental process clause must be a conscious **human participant**, i.e. only a conscious human being can perform a mental process.

This participant is called the **Senser**. The Senser, who feels, thinks or perceives, must either be human or an anthropomorphized non-human. It must be a conscious being:

She	*believed*	*his excuses*
Senser	Pr:mental	

I	*hate*	*injections*
Senser	Pr:mental	

In contrast with material processes, then, we can say that as far as the active participant goes, the choice is more restricted for mentals than the materials. Any nominal can be Actor in a material process clause, but only conscious humans can be Sensers in mental processes.

When we turn to consider what label to apply to the second participant in a mental process, we find yet another difference between mental and material processes, for here the choice is far wider for mentals than materials.

4) Nature of the non-active participant Halliday labels the second participant in a mental process clause the Phenomenon. The Phenomenon is that which is thought, felt or perceived by the conscious Senser:

She	*believed*	*his excuses*
Senser	Pr:mental	Phenomenon

Do	*You*	*want*	*more soup*
	Senser	Pr:mental	Phenomenon

While these examples are reminiscent of Goals in material process clauses, Halliday demonstrates that in fact a far greater range of elements can be Phenomenon in mental processes than can be Goals in materials. As well as the simple Phenomenons of the type analyzed above, Halliday also identifies two types of embedded Phenomena: Acts and Facts.

Phenomenon: Acts

Acts occur with mental processes of perception: seeing, hearing, noticing, etc. An act is realized by an imperfective non-finite clause acting as if it were a simple noun. For example:

I	*Saw*	*(the operation taking place)*
Senser	Pr:mental	Phenomenon: act

He	*Felt*	*(the needle going in)*
Senser	Pr:mental	Phenomenon:act

One test to determine an Act is that the word that cannot be inserted directly after the mental process:

**I saw that the operation taking place*

A further test is that the embedded clause which realizes the Act can be turned into a simple “thing” Phenomenon by rewording it as a (long0 nominal group:

I	*Saw*	*the occurrence of the operation*
He	*Felt*	*the insertion of the needle*
Senser	Pr:mental	Phenomenon

Notice that Acts cannot occur in material process clause:

**Mark cooked the soup heating up*

**They tested my blood being good*

Phenomenon: Facts

The second type of embedded Phenomenon is what Halliday calls a Fact Phenomenon. A Fact is an embedded clause, usually finite and usually introduced by a ”that”, functioning as if it were a simple noun. It can be identified as a Fact embedding because a Fact-noun can be inserted before the (explicit or implicit) *that* which introduces it:

She *She*	*didn’t realize* *didn’t realize*	*(that it was a bomb)* *(the fact that it was a bomb)*

Senser	Pr:mental	Phenomenon

She *She*	*regretted* *regretted*	*(that they hadn't watched the operation)* *(the fact that they hadn't watched the operation)*
Senser	Pr:mental	Phenomenon

Fact phenomenon clauses can usually be reversed, using an active synonymous mental process verb while having the Fact-embedding as Subject:

(The fact that it was a bomb)	*escaped*	*her*
(The fact that they hadn't watched the operation)	*disappointed*	*Her*
Phenomenon	Pr:mental	Senser

As these examples show, Fact Phenomenon are clauses implicitly hanging off (post-modifying) a fact noun, even though that noun may be implicit. Halliday (1985:244 and 247) identifies four sub-clauses of Fact-nouns:

1. 'cases': e.g. fact, cases, point, rule …
2. 'chances': e.g. chance, possibility, likelihood, probability, certainty …
3. 'proofs': e.g. proof, indication, implication, confirmation, demonstration …
4. 'needs': e,g. requirement, need, rule, obligation …

Note that Fact Phenomenon cannot occur in material processes:

**Mark cooked the fact that the dinner was ready*

**The fact that the dinner was ready Mark …*

**Mark cooked the news that the dinner was ready.*

While it is important to appreciate how Facts and Acts make the Phenomenon category much broader than that of Goal in a material process, for most analytical purposes it is sufficient to label the constituent as "Phenomenon".

5) Reversibility The fifth major difference Halliday identifies between mental and material processes is the reversibility of many mental processes. Consider these pairs of mental process clauses:

A	B
I hate injections	Injections piss me off
She believed his excuses.	His excuses convinced her
I don't understand her letter.	His letter puzzled me.
I don't know her name.	Her name escapes me.
They don't give a shit about it.	It doesn't worry them.

It is obvious that each A clause is very similar in meaning to its matching B clause. One analogy we might be tempted to make is with the active/passive distinction

identified for transitive material processes. However, there is a major difference, in that both the clauses under A and those under B are active in voice, as can be seen by the fact that passives exist of both A clauses and B clauses:

A	B
Injections are hated (by me)	I am pissed off by injections
His excuses were believed by her	She was convinced by his excuses
Her letter is not understood (by me).	I am puzzled by her letter

The clauses can therefore not be explained as active/passive variants. In fact, what we are dealing with here is a reversibility, a kind of two-way-process. This can be brought out by labeling our participant roles for both Transitivity and Mood functions.

6) Projection. The sixth major difference between mental and material processes is that most mental processes (except those of perception) can **project**. Material processes cannot project.

It was explained that the systemic interpretation of **clause complex relations** (how one clause relates to another) differs from that of many other grammatical approaches. As the clause complex is beyond the scope of this project, projection will only be presented in outline here, in order simply that this distinctive aspect of mental processes can be appreciated.

To facilitate explanations, here, first, are some examples of where one clause (typically the first) is a mental process whis is projecting : (the shaded boxes indicate a clause boundary)

So	*I*	*thought*		*I'*	*d give*	*blood*
	Senser	Pr:mental		Actor	Pr:mental	Range

So	*I*	*thought*		*"Oh bugger*	*I'*	*'ll give*	*blood"*
	Senser	Pr:mental			Actor	Pr:material	Range

He	*will meet*	*me*	*in Israel*		*she*	*Believed*
Actor	Pr:material	Goal	Circ:loc		Senser	Pr:mental

He	*decided*		*that*	*he*	*'d meet*	*her*	*in Israel*
Senser	Pr:mental			Actor	Pr:material	Goal	Cir:loc

"I	*"ll meet*	*her*	*In Israel"*		*he*	*Decided*
Actor	Pr:material	Goal	Circ:loc		Senser	Pr:mental

He	*decided*		*to meet*	*her*	*in Israel*
Senser	Pr:mental		Pr:material	Goal	Circ: loc

In each of the above examples we are dealing with two clauses. The relationship between the two clauses is a relationship by which one clause "shoots out" or **projects a second clause**. Projection is one kind of what Halliday call the **logical relationships** that can hold between adjacent clauses. Projection describes the relationship that you probably know by the terms *indirect or reported thought, or direct or quoted thought*. Mental process projection has to do with **quoting or reporting ideas**.

The important thing to understand is that the two clauses are not in a relationship of constituency: the projected clause is not a constituent of the projecting clause. If the two clauses were in a constituency relationship, we would have the second clause functioning as a constituent in the first clause. We can tell that it is not embedded within the first because:

1. It is a Finite clause (and so cannot be an Act)

   **So I Thought giving blood.*

2. It is not dependent on any Fact noun (and so cannot be a Fact)

   **So I thought (the fact) that I'd give blood.*

Circumstantials in Mental Process

The full range of different Circumstancial elements can occur with mental processes as with materials:

Afterwards	*she*	*must have felt*	*a lot of pain*
Circ:loc	Senser	Pr:mental	Phenomenon

I	*heard*	*that story*	*on the news*
Senser	Pr:mental	Phenomenon	Cir:loc

Behavioural Processes

The third process type is that of Behavioural processes, exemplified in the following clauses:

Diana sighed loudly.

The poor woman cried for hours.

Simon sniffed the soup.

Halliday describes these processes semantically as a "half-way house" between mental and material processes. That is, the meanings they realize are mid-way between materials on the one hand and mentals on the other. They are in part about

action, but it is action that has to be experienced by a conscious being. Behaviourals are typically processes of physiological and psychological behavior. For example:

watch	cough
look over	snuffle
taste	smile
sniff	frown
stare	laugh
gawk	grimace
work out	scowl
think on	grin
dream	pout
breathe	dream

Indicating their close relationship with mental processes, some behaviourals in fact contrast with mental process synonyms: e.g. *look at* is behavioural but *see* is mental; *listen to* is behavioural but *hear* is mental. Not only are these types of verbs semantically a mixed of material and mental, but grammatically they also fall mid-way between material and mental processes.

The majority of **Behaviourals** have only one participant. Behaviourals thus express a form of doing that does not usually extend to another participant. This one

obligatory participant is called **Behaver**, and is typically a conscious being (like Senser in te mental process clause):

She	*sighed*	*with despair*
Behaver	Pr:behavioural	Circ:manner

He	*coughed*	*Loudly*
Behaver	Pr:behavioural	Cir:manner

Behaviourals can contain a second participantthat is like a Range: a restatement of the process. This participant is called the **Behaviour**:

He	*Smiled*	*a broad smile*
Behaver	Pr:behavioural	Behaviour

If there is another participant which is not a restatement of the process, it is called a phenomenon:

George	*sniffed*	*the soup*
Behaver	Pr:behavioural	Phenomenon

Behavioural process often occurs with Circumstantial elements, particularly of manner and cause:

Simon	*laughed*	*at the girl's stupidity*
Behaver	Pr:behavioural	Cir:cause

She	*was crying*	*with frustration*
Behaver	Pr:behavioural	Cir:manner/cause

While behaviourals display many features of mental process, the process functions more like one of "doing" than one of "thinking/feeling", etc. The evidence for this is that the unmarked present tense for behaviourals is the present continuous, as it is for materials.

I am watching the operation. (behavioural)

**I watch the operation.*

They're all listening to Simon's story.

**They all listen to Simon's story.*

Also like materials, behavioural process cannot project, i.e. they cannot quote or report:

**They all listening (that) Simon's story …*

So, behaviourals, involving the role of aconscious being but being unable to project and taking present continuous tense, are half-way mixes both semantically and grammatically between mental and material processes.

Verbal Process

The following clauses are all the examples of verbal processes:

So I asked him a question.

They tell you nothing.

Simon told them a story.

The Arab boyfriend told her a lot of rubbish.

As these examples show, verbal processes are processes of verbal action: saying and all its many synonyms, including symbolic exchanges of meaning such as in:

My recipe says red wine.

A verbal process typically contains three participants: **Sayer, Receiver, and Verbiage**. The **Sayer**, the participant responsible for the verbal process, does not have to be a conscious participant (although it typically is), but anything capable of putting out a signal. The **Receiver** is the one to whom the verbal process is directed: the Beneficiary of a verbal message, occurring with or without a preposition depending on position in the clause. The **Verbiage** is a nominalized statement of the verbal process: a noun expressing some kind of verbal behavior (e.g. *statement, questions, retort, answer, story):*

So	*I*	*asked*	*him*	*a question*
	Sayer	Pr:verbal	Receiver	Verbiage

The Arab boyfriend	*told*	*her*	*a lot of rubbish*
Sayer	Pr:verbal	Receiver	Verbiage

As with all process types, Circumstantials can occur in verbal processes. The commonest type is manner Circumstantials:

They	*'re talking*	*About the news*
Sayer	Pr:verbal	Cir:manner

What	*are*	*they*	*talking*	*about?*
Cir:manner …		Sayer	Pr:verbal	… Circ:manner

Although many verbal processes occur with a nominal element, a Verbiage, it is a distinctive feature of verbal processes that they project. That is, like mental processes, verbals form a clause complex, projecting a second clause by either **quoting** or **reporting**. But whereas mental processes report or quote ideas, verbal processes quote or report speech (or **"locutions"** in Halliday's terms). A relationship of interdependence between the two clauses gives quoting or **direct speech**, whereas a relationship of dependency between projected and projecting clause gives indirect or **reported speech**. The projecting clause may occur as first or second in the sequence. Analysis must describe the transitivity structure of both the projecting clause (the verbal process clause) and the projected clause (which may be any process type):

direct/quoted speech

I	*said*		*"Can*	*you*	*avoid*	*the scar tissue?"*
Sayer	Pr:verbal			Actor	Pr:material	Goal

Indirect/reported speech

I	*asked*	*them*		*to avoid*	*the scar tissue*
Sayer	Pr:mental	Receiver		Pr:material	Goal

Direct/quoted speech

“They	pay	You,”		you	Said
Actor	Pr:material	Client		Sayer	Pr:verbal

Indirect/reported speech

You	said		that	they	pay	you
Sayer	Pr:verbal			Actor	Pr:material	Client

The quoted or reported clause can be either a proposition (information) as in the above examples, or a proposal (goods and service), in which case the Mood element will often be ellipsed in the direct quotation, while modulation will be used in the direct reporting.

Existential Processes

Existential processes represent experience by positing that “there was/is something”. For example:

There was snow on the ground.

There were these 2 wonderful Swiss men.

There’s a hitch.

Existentials are easy to identify as the structure involves the use of the word *there, There* when used in existential processes, has no representational meaning: it does not refer to a location. It is present in the clause merely because all English clauses require a Subject. It is important to distinguish between *there* used as an existential Subject, and *there* used as a Circumstance of location. While structural *there* is usually unstressed, circumstantial there is usually stressed and often carries an intonation contour:

Structural there:

There is a book on the table, and a bag on the chair.

Circumstantial there:

There is your book – on the table.

The structural there in an existential process does not receive any functionallabel, as it is not encoding any representational meaning. It is left unanalyzed for Transitivity, although in Mood analysis it is of course assigned the Subject role.

Existential processes typically employ the verb be or synonyms such as *exist, arise, occur.* The only obligatory participant in an Existential process which receives a functional label is called the Existent. This participant, which usually follows the *there is/there are* sequence, may be a phenomenon of any kind, and is often in fact an

event (nominalized action): e.g. *There was a battle*. Circumstantial elements (particularly of location) are common in existential processes:

There	*Was*	*snow*	*on the ground*
	Pr:existential	Existent	Circ:location

There	*Were*	*these 2 wonderful Swiss men*
	Pr:existential	Existent

Should	There	arise	any difficulties
		Pr:existential	Existent

Relational process

The category of Relational processes covers the many different ways in which "being" can be expressed in English clauses. Examples of the domain covered by relational processes are:

i) *Di is blood donor.*

ii) *The operation was in Geneva*

iii) *The operation lasted one hour.*

iv) *The story was one hour.*

v) *Diana has daughters.*

vi) *Women are the brave ones.*

vii) *The best place to give blood is in Geneva.*

viii) *The operation took one hour.*

ix) *The bomb was her boyfriend's.*

x) *The bomb belonged to the boyfriend.*

Intensive attributive processes

An intensive rational process involves establishing a relationship between two terms, where the relationship is expressed by the verb be or a synonym. In the **Attributive** sub-type, a quality, classification, or descriptive epithet (**Attribute**) s assigned to a participant (**Carrier**). The Carrier is always realized by a noun or nominal group.

The meaning of an Attributive intensive is that *"x is a member of the class a"*. In this classification kind of attributive intensive, the Attributive is also a nominal group, typically an indefinite nominal (introduced by *a/an*).

Diana	*Is*	*a talkative dinner guest*
Carrier	Pr:intensive	Attribute

I	*won't be*	*a pig*
Carrier	Pr:intensive	Attribute

In the descriptive attributive intensive, the Attribute is a quality or epithet ascribed to the Carrier, i.e. “x carries the attribute a”. In these attributive intensives, the Attribute is typically an adjective:

You	*Are*	*Very skinny*
Carrier	Pr:intensive	Attribute

All the other things	*would have been*	*minute*
Carrier	Pr:intensive	Attribute

Although the commonest intensive verb used is be, various attributive intensive synonyms exist. Some of these are listed and exemplified in Table 2.1.

Table 2.1 Intensive Attributive verbs

VERB	CARRIER	Process:intensive	ATTRIBUTE
become	She	became	suspicious
turn	He	turned	pale
grow	She	grew	serious
turn out	It	turned out	OK
start out	She	started out	healthy
end up	She	ended up	dead

keep	She	kept	quiet
stay		Stay	still
remain		Remain	patient
seem	It	seemed	unlikely
sound	His story	sounded	suspicious
appear	The luggage	appeared	harmless
look	She	looked	jaundiced
taste	The soup	tasted	wonderful
smell	The soup	smells	fantastic
feel	I	feel	funny
stand	A litre of milk	stands	this tall

The essential characteristic of the Attributive intensive (as indeed for all Attributive relations) is that an Attributive clause is not **reversible**. This means that there is no passive form of the clause: the Subject can never conflate with the role of Attribute, but will always conflate with the role of Carrier. This is because Attributive intensives in fact contain only one independent nominal participant, the Carrier, with the Attribute functioning to encode the ascription assigned to the Carrier. For example, the following is not a passive version of the relevant clause, but merely involves the re-positioning of the clause constituents, with the Subject (always the Carrier) moved to clause-final position:

Not weak at all	*Am*	*I*
Attribute	Pr:intensive	Carrier

Even when the clause involves the inversion of the Subject and Finite, the Subject remains the Carrier:

A pig	*I*	*won't be!*
Complement	Subject	Finite
RESIDUE	MO	OD
Attribute	Carrier	Pr:intensive

Since the verb *to be* does not in fact have a passive form (we cannot say *Skinny is not been by you), it is sometimes difficult to determine whether a be-clause is an Attributive or an Identifying intensive (we will see below that Identifying intensives can form passives). The test is to try to find a substitute for the be verb. If a possible substitute verb can be found from the list of Attributive intensive verbs given above, then it will be seen that the clause must be Attributive, as even with the substitute verb, the clause cannot be made passive:

Original clause	possible alternative	no passive
You're skinny	*You've been skinny*	**Skinny is become by you*

I'm not weak at all *I don't feel weak at all* **Not weak at all is felt by you*

I won't be a pig *I won't turn into a pig* **A pig is not turned into by me*

Intensive Identifying Processes

The intensive Identifying processes contrast with the Attributives both semantically and grammatically. Semantically, an Identifying clause is not about ascribing or classifying, but defining. The meaning of identifying intensive is that "*x serves to define the identity of y"*. For example, in the clause:

You	*'re*	*the skinniest one here*
Token	Pr:intensive	Value

you are identified as the "holder" or "occupant" of the identity or label of *skinniest one*.

Grammatically, defining involves two participants: a **Token** (that which stands for what is being defined) and a **Value** (that which defines). While the most frequently used Identifying intensive verb is be, other synonymous intensives are listed and exemplified in Table 2.2. Both the Token and the Value are realized by nominal groups. Typically the nominal groups in Identifying intensive are definite, whereas in

Attributives the Attribute is an Indefinite nominal group: e.g. *the skinny one* (Identifying) vs. *a skinny one* (Attributive). Because the Identifying clause contains two autonomous nominal participants, all Identifying clauses are reversible, i.e. they can form passives:

Table 2.2 Intensive Identifying verbs

VERB	TOKEN	Pr:intensive	VALUE
equal	One plus two	equals	three
add up to	One plus two	adds up to	three
make	Manners	make	the man
signify	Signing a contract	signifies	agreement
mean	"Quantum leap"	mean	a discrete jump
define	The word "exuberant"	defines	his style
spell	C-A-T	spells	cat
indicate	The presence of rust	indicates	moisture
express	Her smile	expressed	pleasure
suggest	His frown	suggested	annoyance
act as	The commissioner	acts as	mediator
symbolize	An*	symbolizes	an unacceptable clause

play	Robert de Niro	plays	Capone
represent	The milk bottle	represents	one litre
stand for	@	stands for	"each"
refer to	"Quantum leap"	refers to	a sharp jump
exemplify	His behavior	exemplified	the typical terrorist

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active:

You	*'re*	*the skinniest one here*
Token	Pr:intensive	Value

passive:

The skinniest one here	*Is*	*you*
Value	Pr:intensive	Token

active:

Married women	Are	the real victims
Token	Pr:intensive	Value

passive:

The real victims	*are*	*married women*
Value	Pr:intensive	Token

The reversibility of Identifying intensive raises the question of determining which "side" of the clause is the Token, and which the Value. This can be determined both semantically and grammatically. Halliday (1985: 115) points out that semantically, the Token will be a "sign, name, form, holder or occupant" of Value, which gives the "meaning, referent, function, status or role" of the Token. The Token, then, is the nominal group which gives the classification. Often, semantic criteria will indicate immediately which part of the clause is Token or Value.

However, it is the grammatical test which determines role assignment. The test involves replacing the verb *to be* with one of the synonymous Identifying intensive verbs listed above, and then determining whether the resulting clause is active or passive, and which constituent is functioning as Subject. The correlation is that:

- TOKEN will always be Subject in an active clause
- VALUE will always be Subject in a passive clause

For example, to determine which is Token and which Value, take the original clause:

You're the skinniest one here

And substitute a possible synonymous verb:

= *You represent the skinniest one here*

Other common sub-type of relationals: (1) Circumstancials

As well as the intensive relationals, two other types of relational processes, Circumstanstial and Possessive, occur commonly, both as Attributive and Identifying, processes.

Circumstantial relational processes encode meanings about the circumstantial dimensions discussed earlier: location, manner, cause, etc. Circumstance, then can be expressed in a clause either as a Circumstantial constituent in a material, mental, behavioural, or verbal process, or through a relational process.

In the Attributive Circumstantial, the Circumstance is often expressed in the Attribute, i.e. while the verb remain intensive, the Attributive will be a prepositional phrase or an adverb of location, manner, cause, etc. We capture this by showing the conflation of the Attributive with the Circumstantial element:

The bomb	*was*	*in her luggage*
Carrier	Pr:intensive	Attribute/Circ:location

As with all Attributive processes, these cannot form passives:

**In her luggage was been by the bomb*.

The Circumstantial meaning may also be encoded in the process itself, with the verb meaning *"is + circumstance"*. In this case, the process is specified as "circumstantial":

The operation	lasted	one hour
Carrier	Pr:circumstantial	Attribute

(where lasted = be + for one hour)

Di's narrative	concerns	her daughter's operation
Carrier	Pr:circumstantial	Attribute

(where concerns = be + about)

Again, these Attributive processes are nor reversible:

**One hour was lasted by the operation.*

**Her daughter's operation was concerned by Di's narrative.*

With Identifying Circumstantials, it is also possible to encode the circumstantial meaning within either the participants or the process.

When the circumstantial meaning is encoded through the participants, both the Token and the Value will be circumstantial elements of time, place, etc., while the verb remains intensive:

Yesterday	*was*	*the last time Di Gave blood*
Token/Circ:time	Pr:intensive	Value/Circ:time

The circumstance may also be expressed through the process, using verbs such as *takes up, follow, cross, resemble, accompany,* etc. In these cases, the process is labeled as "circumstantial":

The operation	*took*	*One hour*
Token	Pr:circumstantial	Value

The terrorist	*accompanied*	*the young woman*
Token	Pr:circumstantial	Value

A milk bottle	*holds*	*one litre of liquid*
Token	Pr:circumstantial	Value

Being Identifying, these verbs form passives:

One hour was taken up by the operation

The young woman was accompanied by the terrorist.

One litre of liquid is hold by a milk bottle.

Other relationals: (2) possessive

Possessive processes encode meanings of ownership and possession between clausal participants. In Attributive possessives, possession may be encoded through the participants (with the Attribute the possessor, and the process remaining intensive):

This	*is*	*Yours*
Carrier	Pr:intensive	Attribute/Possessor

Possession may also be encoded through the process, the commonest Attributive possessive verbs being *to have* and *to belong to*. Typically the Carrier will be Possessor:

I *You* *You*	*had* *have* *'ve got*	*a daughter* *8 pints of blood* *less blood than me*
Carrier/possessed	Pr:possession	Attribute: possessed

But it is possible to have the Carrier as what is possessed:

The bomb	*belonged to*	*the boyfriend*
Carrier/possessed	Pr:possession	Attribute/possessor

Attributive possessive processes are not reversible:

**The boyfriend was belonged to by the bomb.*

In Identifying possessives, possession may again be expressed either through the participants, or through the process. When possession is expressed through the participants, the intensive verb to be is used, with the Token and Value encoding the possessor and the possessed:

The bomb	*was*	*her boyfriend's*
Token/Possessed	Pr:intensive	Value/Possessor

Her boyfriend's	*was*	*the bomb*
Value/Possessor	Pr:intensive	Token/Possessed

The commonest Identifying possessive process is to own, which can form passive, so that either the Token or Value can be Subject:

Her boyfriend	*owned*	*the bomb*
Token/Possessor	Pr:possessive	Value/Possessed

The bomb	*was owned by*	*her boyfriend*
Value/Possessed	Pr:possessive	Token/Possessor

Causative Relationals

A final of relational process that needs to be mentioned briefly is the causative relational. Causative relational processes may occur with either Attributive or Identifying structures, with causation expressed either through a make + be (Process:intensive) structure, or, with Identifying relationals, through a causative Process. As with the causative materials processes we considered earlier, causatives involve an Agent in making or causing something. With Attributive relationals, an Agent (also called the Attributor) causes the Carrier to have an Attribute ascribed: For example:

The experience in Geneva	*made*	*Diana*	*(become)*	*a blood donor*
Agent/Attributor	Pr:causative	Carrier	(Pr:intensive)	Attribute

The introduction of the causative process make as the Finite in these structures means that causative passives can be formed. Remember that the clause is still as Attributive one, however:

Diana	*was made*	*to become*	*a blood donor*	*by the experience*
Carrier	Pr:causative	Pr:intensive	Attribute	Agent/Attributor

Note that the intensive process is often ellipsed from the clause:

Giving blood	*makes*	*you*	*Weak*

Agent/Attributor	Pr:causative	Carrier	Attribute

With the Identifying type, the Agent (or Assigner) makes the Token take a Value:

They	*made*	*Simon*	*the barman*	*for the night*
Agent/Assigner	Pr:causative	Token	Value	Cir:extent

Note that analysis of the passive version of this clause:

With Identifying clauses, the causative relationship between participants can also be expressed directly through a causative circumstantial verb. The common verbs are: results in, causes, produce, etc. With these processes, the verb is a fusion of the intensive meanings “be” or “equals” and the expression of cause. The active/passive test can be used to determine the assignment of Token/Value labels. For example:

Donating blood	*results in/causes*	*weakness*
Token	Pr:circumstantial	Value

Weakness	*is resulted in/caused by*	*donating blood*
Token	Pr:circumstantial	Value

2.2 Previous Studies

Discourse analysis has been previously conducted by scholars. Suzzane Eggins (1994) analyzed three different texs about how to cope with baby crying. She

pointed out that the first text encodes an ideology of "coping" with natural behaviour sequences. The second text sees an ideology of non-coping, justifying professional intervention to avoid negative actions that parents may undertake if not helped. The third text ideologically encoded that the function of babies' behaviour is personal growth for parents!

J.R. Martin and David Rose (2003) analyzed texts about South African's struggle for independence. The texts they analyzed consists of Helena's story of injustice, Desmond Tutu's essay about the struggle and the Constitution of the Republic of South Africa and Australian song writer Paul Kelly expansion on the song *From Little Things Big Things Grow*.

Norman Fairclough (1989) analyzed the discourse on successive Conservative and Labour governments in relation with Thatcherism (Prime Minister Margaret Thatcher's ideology) in an attempt to reveal the language and power.

This study is attempting to find out (1) how the experiential meanings are realized in the discourse on environmental issues; (2) what ideologies are encoded in the discourse on environmental issues.

In doing this, I apply the approach of Systemic Functional Linguistics (SFL) proposed by M.A.K. Halliday (1995). SFL perceives language as a resource for making meanings. The systemicists have advanced four theoretical claims in language use: (1) that language is functional; (2) that the function is to make meanings; (3) these meanings are influenced by the context of situation and culture;

and (4) that the language use is a semiotic process, a process of making meanings by choosing.

The data of this study is collected from printed media, particularly *The Jakarta Pos*t published in 2009/2010. The issues on environment are selected based on the assumption of Hegel's dialectical. The word *dialect* comes from the Greek and refers to a controversy where there is both an argument and a counter-argument. So it means the coming together of two opposing views. Put more simply it means not accepting that one thing is true and the opposite is false, but trying to see how each contributes to an understanding.

2.3 Theoretical Framework

We are going to talk about the ideational meanings, the clause as representation. Through the system of transitivity, we shall be exploring the clause in its who=does=what=to=whom, who/what =is=what/who, when, where, why, or how function.

There are, in fact, three semantic categories which explain in a general way how phenomena of the real world are represented as linguistic structures. They are: Circumstances, Processes, and Participants.

Circumstances answer such questions as when, where, why, how, how many, and as what. They realize meanings about time, place, manner, cause, accompaniment, matter, role.

Processes are central to Transitivity. There are seven different Processes: Material, Behavioral, Mental. Verbal, Relational , Existential, Meteorological.

Material Processes are Processes of material doing. They express the notion that some entity physically does something – which may be done to some other entity.

Participants are realized by nominal groups. We can make an important distinction between the number of participants involved in the process. While some material process involve one participant only, others involve two, or even three. The two most frequent participants in material process are the Actor and the Goal. One further participant which may occur in a material process clause is the Beneficiary.

Mental Processes are ones of sensing: feeling, thinking, perceiving. There are three types: affective or reactive (feeling); cognitive (thinking); and perceptive (perceiving through the five senses)

Behavioural Processes are Processes of physiological behaviour, like breathing, dreaming, snoring, smiling, looking, watching, listening, hiccuping, and pondering.

Verbal Processes are processes of saying, or more accurately, of symbolically signalling. Very often these are realised by two distinct clauses: the projecting clause encodes a signal source (Sayer) and a signalling (Verbal Process) and the other (projected clauses) realises what was said.

Relational Processes involve states of being (including having). They can be classified according to whether they are being used to identify something (Barry Tuckell may be the finest living horn player) or to assign a quality to something (Barry Tuckell is a fine horn player). Processes which establish an identity are called

Identifying Processes and Processes which assign a quality are called *Attributive Processes*.

Existential Processes are processes of existence. E.g.:

There's a unicom in the garden.

Existential Processes are expressed by verbs of existing: 'be', 'exist', 'arise', and the Existent can be a phenomenon of any kind.

Meteorological Processes:

e.g. It *'s hot*

It *'s windy*

it *'s five o'clock*

Two basic principles of functional grammatical analysis are first, that it is not just one constituent that account s for differences in meaning, but *configurations of functions*. In order to describe the structure of the clause as interaction, it was not enough just to label the MOOD element in each clause. We had to label a range of functional constituents (i.e. Mood, Residue, Subject, Finite, Complement, Adjuncts) and look at their possible configurations; and second, that there was one key system involved in interpersonal meaning: the system of Mood choice. The systems Modality (Modalization and Modulation) were dependent on this Mood system.

When we look at the experiential metafunction, we are looking at the grammar of the clause as representation. As with the clause as exchange, we find there is one major system of grammatical choice involved in this kind of meaning. This is the

system of TRANSITIVITY, or *process type*. The Transitivity system is presented in System 3.1.

The circumstantial system is what underlies differences between a simple clause and an expanded clause. Thus, there is one major system (process type) and one minor system (circumstantial) involved. However, as the realization statements show, the choice of process involves a particular configuration of particular roles. We will see that it is not enough only to describe the process type selected in each clause. Each process is associated with different participant roles, occurring in different configurations.

For example, the realization statements say that the choice of a material process involves choosing the associated roles of an Actor (obligatory), and optional elements such as Senser and Phenomenon. So, in describing the grammar of the clause as representation we have not only to describe the differences between process types, but also the associated differences in functional participant roles, and the possible selection of circumstances.

The process type system is what underlies the differences in a paradigm such as:

material

pr:material; +Actor; (+Goal) (+Range) (+Beneficiary)

mental

pr:mental; +Senser; +Phenomenon

verbal

pr:verbal; +Sayer; (+Receiver) (+Verbiage)

behavioral

pr:behavioral; +Behaver; (+Behavior) (Phenomenon)

clause existential

pr:existential; +Existent identifying

pr:identifying; +Token; +Value

relational

attributive

pr:attributive; Carrier; +Attribute

circumstances

+Circumstance

not

System 3.1 The Process Type System (Suzan Eggins, 1994:228)

CHAPTER III

METHOD OF INVESTIGATION

This chapter discusses the nature of the study, the method of collecting data and the method of analyzing the data.

3.1 The Nature of the Study

This study is a descriptive-qualitative and explanatory in nature. Qualitative, because it is connected with how well the phenomena are, rather than how much of it there are. It is verbal explanation rather than numerical one. Descriptive, because it describes what a phenomena is like. It shows the social, cultural and language phenomena in verbal description. And, explanatory, because it gives the reasons of the phenomena described.

3.2 The Method of Collecting Data

The data of this study are the article, news story, and feature about environmental issues published in the daily newspaper, *The Jakarta Post*, in 2010.

3.3 The Method of Analyzing Data

In an attempt to answer the first query, the writer refers to systemic functional approach. The focus of this study is on the organization of the clause to realize the experiential meaning of the discourse on environmental issues in Indonesian media.

The description of this experiential strand of meaning will involve one major system, that of Transitivity (process type), with the choice of process implicating associated participant roles and configurations.

This study will set up the exploration of the lexico-grammatical level of language by asking what the function of grammar is. That is, why does language have this intermediate level of grammatical coding? It concentrates on exploring the nature of the intermediate stratum of language: the stratum of lexico-grammar. Therefore, the unit of analysis of this study is clause.

To start with, the data available will be analyzed by breaking down the text into clauses. Each clause is then broken down into constituents and put in the slots based on their functions as suggested by Transitivity system.

The next step is to describe the experiential meaning of the text in line with the pattern suggested in the analysis. The explanation will be presented by referring to not only the texts analyzed but also the other texts related to the environmental issues.

The discussion of the analyses above illustrates how a systemic approach can be used to gain an understanding of how the three Environmental Issues texts make the meanings that they do.

In answering the next research question namely what ideologies are encoded in the discourse on environmental issues, the writer starts with register analysis of the text. Based on the result of the overall analysis conducted before, the writer searched for the ideologies in the texts.

It is at the level of ideology, the most abstract context to which reference will be made, that the discrete findings of the various analyses can be most coherently integrated. As ideology impacts on each of the levels of context, and through them is realized in linguistic choices, the linguistic evidence from all the preceding analyses can be used to make explicit what positions, biases, and interpretations are encoded in the texts.

The impact of ideology on field relates how the text encodes such experiential meanings as: who initiates, what kinds of action/events, who responds to those actions, and how.

At the level of genre, the writer investigated whether all the three Environmental Issues texts have a common purpose, to impart information, for the benefit of the readers. Ideology impacts here by indicating which genre will be chosen to achieve that imparting, and by influencing the schematic structure.

Ideology is also realized in the choice between the warning Outlook or the Improvements one. Therefore the writer investigated how Text 1, Text 2 and Text 3 construct the position that the audience should behave.

CHAPTER IV

FINDINGS AND DISCUSSION

This chapter is dealing with the data analysis and its discussion. In the analysis section the data will be analyzed clause by clause to reveal how the experiential meanings are realized. The discussion section will explain how the experiential meanings are realized and what ideologies are encoded in the discourse on environmental issues.

4.1 Systemic Text Analysis

You will recall from Chapter I that of many possible applications of systemic linguistics, the most general one adopted as the framework for this Final Project is that of explaining "why a text means what it does". Two pairs of terms can be used to clarify the aims and scope of systemic text analysis. First, we can contrast the *interpretation* with the *explanation* of text. And secondly, we can recognize a distinction between the *understanding* of a text and its *evaluation*.

Traditional approaches to the study of literary texts model text analysis as an interpretive activity. Students learn to read a text and try to argue about what meanings they think the writer was making in the text. From a systemic perspective, however, text analysis is not an interpretive but an *explanatory* activity. The linguistic analysis of text is not an interpretation of that text; it is an explanation (Halliday and Hasan 1976:327). While the interpretation of a text would aim to uncover and state *WHAT* a text means, the systemic analysis of a text aims to uncover and state *HOW* a text means. But in fact there

is no dichotomy between these terms. Given that a functional-semantic perspective defines the meaning of any linguistic item (morpheme, clause, text) as that item's function in a context of use, it follows that in the very process of demonstrating HOW a text means, we are also in fact laying bare WHAT a text means.

A second important distinction needs to be made between understanding a text and evaluating a text. Halliday (1985:xv-xvi) represents this distinction as one of levels of analysis, with the lower of the two levels, that of understanding, involving the use of linguistic analysis to show "how, and why, the text means what it does". As he points out, this level of understanding "should always be attainable", given an appropriate functional grammar of text as an analytical tool.

It is through the realizational relationship established between each metafunction and a grammatical system, and between the tripartite functional organization of language and the tripartite construction of register, between cultural context and the schematic structure of text, that a systemic model offers an effective tool for exploring this higher level of text analysis.

The explanatory and evaluative power of the model can be illustrated by the following discussion of the two environmental issues texts.

4.2 Analyzing the Experiential Meanings

As soon as we ask functional questions such as "how do people use language?" (i.e." what do people do with language?"), we realize we have to look at real

examples of language in use. Intuition does not provide a sufficiently reliable source of data for doing functional linguistics. Thus, systemicists are interested in the authentic speech or writing of people interacting in naturally occurring social contexts. We are interested, for example, in language events such the following.

Text #1

Global warming and civilization

1. Adverse impacts from global climate change on the earth's ecosystem and human well-been felt in the last half century. 2. According to Intergovernmental Panel on Climate Change (IPCC) data from 1970-2004, 3. the earth's temperature has increased by an average of 0.2 degree Celsius per year.

4. The year from 2001-2010 have been the warmest 10 year period since the beginning of weather recording in 1850. 5. The heat of the oceans increased in the second half of the 20th century.

6. Consequently, glaciers, ice caps and ice sheets from the Arctic and Antarctic Oceans have recently been melting, 7. which resulted in a mean sea level 8. rise from -20 centimeter in 1950 to +5 centimeters in 2000.

9. This year the earth experienced extreme weather, 10. such as a deadly summer heat wave in Russia with temperatures soaring to a record 38.2 degrees Celsius; 11. heavy rains and flood in Indonesia, Thailand, Vietnam and Australia droughts 12. that afflicted the Amazon basin and southwest China floods 13. that devastated Pakistan ; 14. and drastic changes in oceanic and atmospheric conditions in the California Current Ecosystem brought about summertime hypoxia, anoxia and massive fish kills.

15. If the earth's temperature cannot be maintained 16. and increases more than 2 degrees Celsius, 16. a number of catastrophes will occur in various parts of the globe. 17. These will include rising sea levels by 1 to 6 meters, 18. which could inundate coastal areas around the world, 19 increased flooding and altered rainfall cycles.

20. Dry seasons will get longer 21. and wet seasons will get shorter 22. but more intense . 23. Heat waves would be more frequent and dangerous . 25. Shifting weathers patterns could destabilize the world's food supply and access to clean water, 26. and lead to mass migration 27. as farmers and fishermen flee drought or flood-prone regions.

28. Globe climate change and its concomitant negative impacts has mostly been a result of increasing global emissions of greenhouse gases 29. originating from the burning of fossil fuels, deforestation and extreme changes in land use and land cover.

31. Yet, few nations, except Indonesia, have taken serious action 32. to curb global warming 33. by legally binding themselves 34. to cut greenhouse gas emissions 35. as prescribed by the IPCC.

36. According to the IPCC, 37. if we were to avoid unmanageable catastrophes from global warming, 38. the emissions rate of greenhouse gases should be cut by 25-40 percent in 2020 and 50 percent in 2050 from 1990 levels. 40. Developed countries should reduce their emissions by 80 percent by 2050.

41. During the 2009 COP-15 conference in Denmark, President Yodhoyono pledged 42. Indonesia would reduce carbon emissions by 26 percent from the business-as-usual estimate of emissions in 2020. 43. Unfortunately, Indonesia's heroic commitment has not enticed other nations, 44. particularly the two largest emitters of greenhouse gases, the US and China, to follow suit.

45. Rich nations like those in Europe, the US, Japan and Australia are reluctant 46. to slash their greenhouse gas emissions 47. because emerging nations with high economic growth in the last 15 years, especially China and India, have not legally committed 48. to reducing their carbon emissions. 49. In the meantime, developing and poor nations are worried 50. that cutting emissions could hamper economic growth 51. they badly need 52. to deal with unemployment and poverty.

53. Such rationales, from both rich and poor nations, are depicted in Garret Hardin's "tragedy of the commons" story, 54. which applies to almost all common-property resources.

55. In the story, a group of medieval English herders keep increasing the size of their individual herds, 56. eventually exceeding the capacity of the village commons 57. with everyone losing their entire herds.

58. At the time Hardin's paper was published in 1968, 59. many people found the "tragedy" metaphor insightful 58. and applicable to the world's fisheries. 61. Fisheries provide a telling example of the common dilemma: 62. The resource is fragile, 63. and the fish you do not catch today may be caught by someone else tomorrow.

64. But since each fisherman operates with the same rationale, 65. the users of the fishery-common resource are caught in an inevitable process 66. that leads to the extinction of the very resource 67. on which they all depend. 68. Because each user ignores the cost 69. imposed on others, 70. individually rational decisions accumulate 71. to result in a socially irrational outcome.

72. It is therefore timely for all citizens and governments of the world 73. to join hands 74. to significantly cut greenhouse gas emissions. 75. Although stabilizing atmospheric CO_2 levels is a staggering challenge, 76. it is certainly doable.

77. Recent environmentally friendly technological innovations in forestry, agriculture and fisheries and in mining, transportation, energy and industrial processes have made it possible 78. to reduce greenhouse gas emissions 79. as recommended by the IPCC 80. and, at the same time, maintain economic growth .

81. With advance in wind turbine design, 82. more efficient solar cells, geothermal, bio-energy and fuel cells, 83. we now have the basic technologies needed to shift quickly from a carbon-based to a hydrogen-based energy economy. 85. The fuel cell is a device powered by hydrogen 86. and uses an electro-chemical process 87. to convert hydrogen into electricity, water vapor and heat.

88. Hydrogen can come from many sources, 89. including the electrolysis of water or the reformulation of natural gas or gasoline, 90. a process that extracts the hydrogen from hydrocarbons. 91. If the hydrogen comes from water, 92. then electricity from

any source can be used 93. to electrolyze the water. 94. If the electricity comes from a wind farm, hydropower stations, geothermal power stations or solar cells, 95. the hydrogen will be clean 96. and produced without carbon emissions or air pollutants.

97. Curbing global carbon emissions by 25-40 percent by 2020 and 50 percent by 2050 is definitely within range. 99. Ambitious though this might seem, 100. it is commensurate with the threat 101. that climate change poses to our earth and civilization. **(Rokhmin Dahuri, *The Jakarta Post*, December 14, 2010. Page 6)**

This text serves to illustrate a basic premise of systemic linguistics that language use is purposeful behavior. The writer of these excerpts did not just produce them to kill time, or to display their linguistic abilities. They wrote the texts because they want to use language to achieve a purpose: they had goals that they were using language to achieve. We could gloss the overall purpose of Text 1 is to persuade that it is timely for all citizens and governments of the world to join hands to significantly cut greenhouse gas emissions. Although stabilizing atmospheric CO_2 levels is a staggering challenge, it is certainly doable.

In having a purpose, these instances of language use are typical, not exceptional: people do not "just talk" or "just write". Any use of language is motivated by a purpose, whether that purpose be clear, pragmatic one, or less tangible, but equally important, interpersonal one.

This text also illustrates a second consequence of asking functional questions about language: that we have to look at more that isolated sentences. If I have presented you with only one sentence, chosen at random, from the text, for example, "*The heat of the oceans increased in the second half of the 20th century"* it would

have been very difficult for you to determine the motivation for the writing. Similarly, from the writers' point of view, it would have been almost impossible for them to achieve the desired goals through a single sentence. In other words, to achieve successfully the overall purposes of criticizing, the writers must meet the implicated goals of explaining a problematic phenomenon.

If we are to understand what language is achieving in the situation, we need to describe the communicative behavior as involving not just one sentence, but at least two: both the command and the response. Typically, of course, getting something done using language will involve many more than two moves. As the texts above show, in order to explain Curbing global carbon emissions by 25-40 percent by 2020 and 50 percent by 2050 is definitely within range, the writers have presented a discussion consisting many sentences. They have in other words produced what systemic linguists call a text.

The term text refers to a complete linguistic interaction (spoken and written), preferably from beginning to end. Because the purpose and structure of communicative behavior cannot be described by looking at only single sentences, systemic linguists look instead at texts, the linguistic products of everyday language events. Comparing authentic texts, particularly those which have something in common, points us towards interesting dimensions of language use. Consider, for example, Text 2:

Text # 2

Muslim leaders and prevention of environmental disasters

1. Mankind's domination and rapid expansion on Earth has been blamed by environmentalists as the root of environmental destruction. 2. However, in both Judeo-Christian and Islam teachings, man is not only granted the right 3. to utilize natural resources for the fulfillment of his interest, 4. but he is also responsible for the maintenance and caring of the Earth.

6. Religion and environmentalism actually have several things in common 7. and can therefore help each other 8. to achieve the common goal , 9. which is ensuring a healthy Earth, 10. even though they may have different reasons . 11. Religious followers want to keep the Earth habitable 12. because the future of humanity depends on it. 13. Environmental activists want to save the Earth for the sake of the Earth. 14. Both religion and environmentalism require a long-term vision. 15. Religious devotees know 16. that their actions, be they small or large, will have an effect on them in the future. 17. Good deeds will bring good results and vice versa.

18. Both religion and environmentalism forbid us 19. to be selfish. 20. Religion encourages altruism 21. by promising a reward in the hereafter as well as in the world. 22. Social harmony can only be achieved 23. when the members of a society are considerate and helpful to each other. 24. Likewise, to solve environmental problems 25. altruism is absolutely required . 26. If people living near upstream rivers pollute the rivers, 27. people living downstream will suffer the consequences . 28. If we pollute the air, 29. the pollutants will be moved by the wind 30. and affect people in other areas. 31. On global scale, countries generally accept 32. that global cooperation is needed 33. to overcome environmental issues.

34. Being altruistic and taking a long-term approach, 35. both religious devotees and environmentally-committed people are ready 36. to sacrifice their materialistic pleasures for the sake of the environment . 37. To achieve nobility, 38. religious devotees must be able to control their desire. 39. Many religions have sacrifice rituals 40. and encourage their followers 41. to live a modest life. 42. The Prophet Muhammad and other Prophets live in austerity. 43. Living a simple life is the essence of conservation. 44. A luxurious life will result in resource depletion and environmental pollution. 45. Both religion and environmentalism value quality of life but not extravagance.

46. Both religion and environmental movement leaders must also be ready 47. to fight for a noble cause. 48. The majority of people pursue a worldly life. 49. They strive to amass wealth beyond their basic needs. 50. Governments as well as companies always promote consumption (m) 51. in order to increase economic growth. 52. Promoting a modest life is therefore a daunting task.

53. Few people have the capability and willingness 54. to consider long-term goals. 55. Asking them to sacrifice pleasure 56. that they experience now 57. in exchange for a better future will be difficult. 58. In short, encouraging people 59. to adopt a religious path 60. as well as an environmentally sound way of life will be a never-ending struggle. 61. Only those with clear vision and strong conviction can bear this task.

62. The Indonesian Environment Ministry has insisted 63. that it would not delay the implementation of 2009 Environment Law 64. as it did not believe 65. it would hamper the mining of the country's rich mineral resources. 66. The ministry also asserted 67. that it would not amend an article of the law, 68. which has created controversy 69. as it was initiated purely by the House of Representative. 70. The statement was made 71. in response to calls from the Energy and Mineral Resources Ministry and oil and gas business groups 72. for a two year delay over fears 73. that the law's tightened standards of emissions and waste water levels could hurt oil and gas production. (**Wiryono. *The Jakarta Post* April 9, 2010: Page 7)**

As you read this text through, you will no doubt have realized that in some ways it is very like Text 1, and yet in other ways it is very different. The two texts share a focus on environmental issues and what can be done about them, and yet each approaches the topic in ways that indicate they are intended for different audiences. In comparing those two texts you might try to suggest the likely source of each text, and consider what aspects of the texts are providing you with clues.

Text # 3

Biodiversity, Indonesia and Poverty

1.The 10th Conference of Parties (COP) of the Convention Biological Diversity (CBD) was held in Nagoya, Japan, from Oct. 18 to 29.

2.Since the CBD was introduced in 1993, 3. this convention is aimed at mainstreaming biodiversity conservation initiatives and sustainable use of biodiversity on a global scale.

4.The CBD also intends 5. to promote fair and equitable benefit-sharing of biological utilization, 6. including genetic resources.

7.As a "mega-biodiversity" nation, 8. Indonesia could become a key player 9. in effort to save (Pm) global species. 10. Indonesia could play a leading role 11. in developing international policies 12. that support conservation of tropical biological resources. 13. Indonesia could also capitalize on expansion of international research collaborations 14. to study biology 15. and utilize natural products.

16.This strategic position, if well played, may result in gigantic benefits for Indonesia. 17. Remember, 18. a large proportion of the plant and animal species that inhabit the Earth live in this tropical country.

19.Successful conservation of biodiversity in Indonesia would make a significant contribution 20. to combating the extinction of precious global species.

21.The richness of forest habitats and coral reef ecosystems in the tropics provides the world with incalculable biological capital.

22.Unfortunately, most of this biological wealth has not been sufficiently studied, 23. and as a result, there remains insufficient knowledge of their economic values.

24.In addition to being an important part of the ecosystem, 25. species diversity may serve as a source of income. 25. The exploration, identification, and utilization of biodiversity can lead to commercial benefits 26. – presently referred to as "bio-prospecting".

27. However, an inconvenient factor remains. 28. Many commercial products, including medicines, are derived from traditional knowledge of tropical diversity, 29. but are developed 30. and commercially traded by giant companies 31. based in developed countries.

32. Ironically, there are no benefits for the people 33. who traditionally have been developing 34. and utilizing the same products.

35. The great loss to country that are naturally home to biological wealth has become one of the focuses of the current COP. 36. The ability to utilize species diversity for Indonesian interests must be improved. 37. But at the same time, we are actually in dilemmatic position.

38. We contribute to the loss of tropical species. 39. Inability to slow the rate of deforestation 40. and prevent loss of coral reef habitats 41. has been seen as the main cause of extinction of tropical species. 42. With no real action, our diplomacy on biodiversity conservation will not be well-received in international forums.

43. The target to save biodiversity in Indonesia 44. could be synergized with other programs. 45. The negation on climate change mitigation, 46. which include preventing deforestation as an important part of the overall strategy, 47. may become a good tool for saving tropical forest biodiversity. 48. Therefore Indonesia's perspectives on REDD (reducing emission from deforestation and degradation) initiatives should be changed.

49. This scheme should not be only perceived as a carbon trading mechanism 50. that aims to reduce carbon emissions, 51. but it has to include biodiversity protection as an integral component.

52. Indonesia is also actively involved in achieving the United Nations Millennium Development Goals (MDGs). 53. In terms of environmental sustainability, 54. the objective of Indonesia's MDGs is to synchronize state policies with sustainable development. 55. Decreasing the rate of deforestation has been put in priority position. 56. 57. If this objective is achieved, 58. it could notably contribute to the conservation of species diversity.

59. Indonesia frequently reacts negatively to international criticisms of the loss of tropical ecosystems. 60. This is understandable 61. because we need development in order to alleviate poverty. 62. As a consequence, tropical ecosystems have been converted. 63. This is actually the challenge of millennium development: 64. Reducing poverty on the one hand goals (Cp): 65. while saving the environment on the other.

66. This involves two interesting factors. 67. First, we believe that the exploitation of biological resources will have significant effects on efforts to fight poverty. 68. But in fact, the massive exploitation of natural diversity has not significantly minimized Indonesia's poverty rate.

69. The history of natural forest exploitation is a fine example. 70. Before the golden era of natural forest concessions ended, 71. its contribution to the improvement of the lives of people living around forests was not very real. 72. On the contrary, massive exploitation created disasters. 73. The recent flood in Wasior that killed hundreds of people was partly caused by deforestation.

74. The second factor is that the traditional methods of utilizing biodiversity also fail to uplift living standards. 75. The living conditions of indigenous people in forest areas have become worse 76. as these people become more marginalized. 77. This is not only because of external factors, 78. such as plantation expansion and forest exploitation, 79. but also the increasing population.

80. For example, reports recently found 81. that more people from *Anak Dalam* tribe in Jambi are leaving the forests. 82. Ironically, most of them then become beggars in the city.

83. In short, we have to think of a regime of utilization of biological resources 84. that is sustainable and contribute to poverty alleviation. 85. One approach is to increase bio-prospecting activities. 86. Scientific exploration and research has to be prioritized.

87. Local knowledge of biodiversity also must be accommodated. 88. Development of biodiversity prospects will not only improve our awareness of the importance of biological resources, 89. it will produce financial benefits as well. **(Yansen, *The Jakarta Post*, November 1, 2010. Page 7)**

In reading through these three texts, you have almost certainly been able to suggest the likely sources. You might now like to compare your suggestions with the actual source of each text. You will probably be surprised at how accurately you were able to guess at the sources of the texts. How did you do it? How did you know where each text might be found?

Since you only had the words on the page to guide you, you must have worked out a great deal about the sources of each text from the way language is being used. You probably noted features that both Text 1, Text 2 use “formal” or “heavy” vocabulary

(e.g. *Adverse impacts from global climate change on the earth's ecosystem and human well-been felt in the last half century, mankind's domination and rapid expansion on Earth, etc.*) and is addressed to "we"; but it isn't conversation because there's no interaction.

What you have just done in an informal way is to deduce the context of language use from the linguistic patterns in a text. The fact that we can do this, that simply by reading or hearing a text we can figure out so much about its source, clearly suggests that in some way context is in text: text carries with it, as a part of it, aspects of the context in which it was produced and, presumably, within which it would be considered appropriate. This example points to an issue which is a particular interest to systemic linguists: the relationship between language and context.

4.3. Transitivity Analysis

The process type and participant configurations of each clause are shown in the Appendix. Table 4.1 presents the total number of clauses of each process type in each text.

Table 4.1 Transitivity in Text 1, Text 2, Text 3.

process type	Text # 1	Text #2	Text#3
Material	59	46	39
Mental	4	5	10
Verbal	2	3	1

Behavioral	0	1	5
Existential	0	0	2
relational:attributive	15	9	16
relational:identifying	4	1	11
relational:possessive	1	4	0
Causative	1	0	0
total number of processes	86	69	84

As this table shows, material processes are dominant in both texts. This indicates that all the two texts are centrally concerned with actions and events, and the participants who carry them out. However the proportion of material processes to other process type is highest in Text # 1 and # 2. Those texts, then, are predominantly about tangible, physical actions. The presence of existential in Text # 3 suggests that these actions are sometimes framed as taking place within settings which are asserted simply as existing, while existential are never chosen in Tex # 1 and # 2. Table 4.1 also shows that Text # 3 uses a high proportion of mental processes, whereas Text#1 and #2 contain roughly equal proportion. It suggests that conscious cognition, rather than bodily behavior, is the text's concern. Text #1 and #3 each contain high proportions of relational processes, although the attributives dominate the relational

category. This indicates that Text 1#1 and #3 are more descriptive than Text #2, which is just as much concerned with defining as describing participants.

Significantly, causative process is used in Text #1, while there are no causative at all in Text #2 and #3. This provides evidence of the difference in purpose between the texts, with Text #1 constructing a field to do with reasons and explanations, while Text #2 and #3 construct a field of events and happenings.

Table 4.2 presents numbers for each type of Circumstantial element in the texts.

Table 4.2 Circumstances in Text#1, Text#2 and Text#3

Type	Text # 1	Text # 2	Text # 3
Location	5	2	8
Extent	12	1	2
Manner	5	8	2
Role	3	0	5
Cause	7	4	4
Total number of ranking clauses	32	15	21

As this table shows, Text # 1 has a high number of Circumstances in proportion to its length. Part of the function of these circumstantial elements appears to be to deflect arguability from participants. However, Circumstances also function to increase the

experiential content of the text, as they add specificity to the information given. This frequency of Circumstantial detail, then, contributes to boosting the experiential density of the text, and complements other strategies used to make this text very written in mode.

While in Text #1 and #3 the dominant circumstance is that of location, in Text #2 this role is shared by circumstance of manner and cause. While circumstance of extent is the most frequent type realized in Text #1, noting how long they took place, Text #2 is concerned with how behaviors occurred, and in terms of manner Text # 1 is concerned with how and why things are the way they are, and what caused them to be that way.

4.4 Register Analysis of the Texts

The information obtained from the detail analysis of the texts can now be interpreted as the realization of contextual dimensions, enabling a summarized register description to be presented in Table 4.3. This contrastive register description of the texts is based on the combined lexico-grammatical and discourse-semantic evidence presented above. The evidence has now allowed us to specify similarities and differences between the texts at this contextual level. It permits two possible grouping of the texts in terms of which texts are “more like” each other for different register dimensions.

Field analysis suggests a surprising similarity in field between Text # 1 and Text # 3. Unlike Text # 2 which deals with behaviors and moods of the participants, Text # 1 and Text # 3 construct the field from the perspective of the nature: what the impact of climate change is and that we contribute to the loss of tropical species. Thus, while in a general sense all the texts do share a common field of "environment issues", linguistic analysis permits this to be more narrowly described, thus differentiating the way each text approaches, and thereby constructs, the field.

Table 4.3 Register description of the texts

Register Variable	Text # 1	Text # 2	Text #3
Field	Clarifying the impact of climate change on the earth's ecosystem and human in the last half century and persuading that it is timely for all citizens and governments of the	Mankind's domination and rapid expansion on Earth has been blamed by environmentalists as the root of environmental destruction and it is appealed that both religion and environmental	We have to think of a regime of utilization of biological resources that is sustainable and contribute to poverty alleviation. One approach is to

	world to join hands to significantly cut greenhouse gas emissions.	movement leaders must be ready to fight for a noble cause	increase bio-prospecting activities. Scientific exploration and research has to be prioritized.

4.5 Ideology in the Texts

It is at the level of ideology, the most abstract context to which reference will be made, that the discrete findings of the various analyses can be most coherently integrated. As ideology impacts on each of the levels of context, and through them is realized in linguistic choices, the linguistic evidence from all the preceding analyses can be used to make explicit what positions, biases, and interpretations are encoded in the texts.

The impact of ideology on field relates how the text encodes such experiential meanings as: who initiates, what kinds of action/events, who responds to those actions, and how.

In Text #1 the writer is trying to clarify the impact of climate change on the earth's ecosystem and human in the last half century and persuading that it is timely for all citizens and governments of the world to join hands to significantly cut greenhouse gas emissions. The text thus encodes an ideology of "coping" with the impact of climate change on the earth's ecosystem and human in the way that all citizens and governments of the world join hands to significantly cut greenhouse gas emissions.

In Text #2 the writer underlines that mankind's domination and rapid expansion on Earth has been blamed by environmentalists as the root of environmental destruction and it is appealed that both religion and environmental movement leaders must be ready to fight for a noble cause. Here, then, we see an ideology of avoiding further environmental destruction by persuading both religion and environmental movement leaders to be ready to fight for a noble cause.

In Text #3 the writer believes that we have to think of a regime of utilization of biological resources that is sustainable and contribute to poverty alleviation. One approach is to increase bio-prospecting activities and that scientific exploration and research has to be prioritized. The ideology encoded here is that the utilization of biological resources should be sustainable and contribute to poverty alleviation.

At the level of genre, we can recognize that in some respects all three of the Environmental Issues texts have a common purpose, to impart information, for the benefit of the readers. Ideology impacts here by indicating which genre will be chosen to achieve that imparting, and by influencing the schematic structure. Thus, in the choice of Exposition genre rather than the Narrative, we see the ideological

implication that “real” learning should take place via explicit objectification, generalization of information.

Ideology is also realized in the choice between the warning Outlook or the Improvements one. Text # 1 constructs the position that all citizens and governments of the world should join hands to significantly cut greenhouse gas emissions. Otherwise a number of catastrophes will occur in various parts of the globe. These will include rising sea levels by 1 to 6 meters, which could inundate coastal areas around the world, increased flooding and altered rainfall cycles. Dry seasons will get longer and wet seasons will get shorter but more intense. Heat waves would be more frequent and dangerous. Shifting weathers patterns could destabilize the world’s food supply and access to clean water, and lead to mass migration as farmers and fishermen flee drought or flood-prone regions. Meanwhile Text # 2 states that both religion and environmental movement leaders must be ready to fight for a noble cause. Religion and environmentalism actually have several things in common and can therefore help each other to achieve the common goal, which is ensuring a healthy Earth, even though they may have different reasons. Religious followers want to keep the Earth habitable because the future of humanity depends on it. Environmental activists want to save the Earth for the sake of the Earth. Both religion and environmentalism require a long-term vision. Religious devotees know that their actions, be they small or large, will have an effect on them in the future.

Good deeds will bring good results and vice versa. In the Text # 3 it is suggested that we have to think of a regime of utilization of biological resources that is

sustainable and contribute to poverty alleviation. One approach is to increase bio-prospecting activities. Scientific exploration and research has to be prioritized. Local knowledge of biodiversity also must be accommodated. Development of biodiversity prospects will not only improve our awareness of the importance of biological resources, it will produce financial benefits as well. As a "mega-biodiversity" nation, Indonesia could become a key player in effort to save (Pm) global species. Indonesia could play a leading role in developing international policies that support conservation of tropical biological resources. Indonesia could also capitalize on expansion of international research collaborations to study biology and utilize natural products.

The discussion of the analyses above illustrates how a systemic approach can be used to gain an understanding of how the three Environmental Issues texts make the meanings that they do.

4.6 The contribution of the study

Referring to the power of discourse analysis and lexical density as well as sophisticated wordings in both the texts and the method of analyzing them it is reasonable to argue that this study is contributing significantly to improve the communicative competence of the English language education students who read this final project.

The recent paradigms introduced in viewing environmental issues is assumed to inspiring the endeavor to prepare students acquiring different kinds of paradigms and the dynamic of shifting paradigms in English language education from time to time. It is expected in turn that students will be in competent to implement the acceptable paradigms in English language education.

This study underlines the theoretical claim of SFL that language is functional. It is reasonable to suggest that helps students to acquire the basic and applied linguistics to support their qualification as individuals who are able to provide explanation and solution to those who need their expertise.

It is argued in this study that the function of language is making meanings – not only one meaning as the traditional theoretical claims suggest. It should make students conscious that they have to possess the spirit to read and to access information in developing their knowledge and compensating their backwardness and be active in local, national and global academic relationships.

The findings that these meanings are influenced by the context of situation and the context of culture suggests that the teachers and students should possess the ability to carry out researches that support the programs of English language education and that solves the real problems in the field.

By considering different kinds of opinions and views this study suggests that language use is a process of semiotics, a process of making meanings by choosing. It is reasonable to argue, therefore, that this study encourages the effort to inspire

students in gaining the deep understanding about the relation between the philosophy of language and the acceptable paradigms as social semiotic.

In terms of shaping positive attitude of our students on environmental issues, this study could possibly attract their awareness on such issues including climate change issue. They need to know, for example, that Indonesia seems to be at the crossroads of the climate change issue. On the one hand, we have to stand together with the international community to push the mitigation agenda on decreasing carbon emission levels. On the other hand, this nation is already facing real problems with regard to climate alteration, especially in the agricultural sector, and it needs prompt adaptation action. So which one has to be prioritized?

Extreme weather for the last couple of months has adversely affected agriculture. The prolonged rainy season devastated many agricultural commodities, such as vegetables and rice, in many regions. The price of those commodities such as chili has increased. The weather anomaly that has been happening is hypothesized to be linked with the very real and growing threat of climate change.

David Lobell et al (2008), in their projection on food security and climate change by 2030 published in *Science* Vol. 319, said there were 12 regions that had the potential to suffer food insecurity. Southeast Asia is one of the regions. These 12 "hunger hotspots" have similar fundamental characteristics.

First, these regions are relatively unaware of the possibilities of climate change impacts on food security. Consequently, needed policies and actions are not taken. Second, there is a lack of comprehensive knowledge and understanding on the

responses of food crops to climate alteration. Lack of awareness and understanding, in addition to a lack of funds and time investment to deal with climate change impacts, result in no appropriate policies being delivered.

Our current situation is like a frog swimming in warm water. If the water is brought up to the boil, the frog will not realize it is being boiled until it is too late. Our duties are not only stopping the water becoming hotter, but also saving the dying frog. The question is: Are we able to formulate appropriate and necessary climate change adaptation and mitigation program? Mitigation programs are necessary to avoid more complex problems in the future. A mitigation scheme such as REDD is indeed important to help us save our forest environment. The sustainability of forest ecosystems will directly affect the agricultural sector.

To sum up, students can play a role to overcome the lack of public awareness and understanding in environmental issues by joining hand in hand with other parties in socializing the threat and how to response it properly.

CHAPTER V

CONCLUSION AND PEDAGOGICAL IMPLICATION

The previous chapters have discussed the introduction to this final project, the review of related literature, the method of investigation and the findings and discussion of this final project. This chapter discusses the conclusion of this final project, the pedagogical implication and the suggestion.

5.1 Conclusion

In Chapter 4 it has been presented the results of analysis of three different texts, in order to demonstrate that detailed lexico-grammatical and discourse-semantic analyses can shed light on how texts make meanings, where those meanings come from, and some of the implications they may carry with them. The close-up linguistic analysis of three different texts has illustrated that the texts are rich in meanings: they make not just meanings about what goes on and why, but also meanings about relationships and attitudes, and meanings about distance and proximity. The experiential meanings of the discourse on environmental issues are realized in a subtle way by following the pattern of transitivity system.

By relating specific linguistic choices to the construction and reflection of situational, cultural and ideological context, these three texts have been shown to in fact encode meanings about such far reaching dimensions as: the threat that climate change poses to our earth and civilization, religion encouragement of altruism by

promising a reward in the hereafter as well as in the world and that living a simple life is the essence of conservation, whereas luxurious life will result in resource depletion and environmental pollution, and the reminder that we contribute to the loss of tropical species and how we reduce poverty on the one hand goals while saving the environment on the other.

5.2 The Pedagogical Implication

The pedagogical implication of this study is that academic language teaching should foster literacy, not only in terms of basic reading and writing skills, but also in terms of a broader discourse competence that involves the ability to interpret and critically evaluate a wide variety of written and spoken texts.

In this way students will be aware of the significance of environmental issues and encouraged to be altruists and to live a simple life. They will realize that they are now destroying natural ecosystems at a much larger scale and at a faster rate than our ancestors did, and having much more of an impact. Higher standards of living need more resources than ancient people. Now, our population is almost seven billion! The increase in natural resource consumption shows similar patterns with human population growth. Another factor influencing natural resource consumption rates is lifestyle. More luxurious lifestyles demand more resources.

How many people can the earth support? It all depends on what kind of lifestyle we lead. But instead of asking that question, a better question would be: Why should we allow our population to grow? What are the benefits of population growth? Isn't it better that we keep our population small so our cities are not crowded, our air and

water are not polluted and our landscapes are moderately modified? With a smaller population we could have more time and energy to improve our quality of life rather than struggled just to feed people and provide other basic needs. We may all have died before a global environmental catastrophe occurs, but our children and grandchildren will suffer tremendously. So, let's tackle the root of environmental problems and leave the earth in good condition for our descendants.

5.3 Suggestion

It is suggested that other researchers would be interested in conducting the research on the same issue but focusing on the other strands of meanings, namely interpersonal and textual ones, in order to get a more comprehensive picture of how the three strands of meanings on environmental issues are realized.

Public awareness of the environmental issues needs to be enhanced. In terms of climate change, for example, it covers three matters: what climate change is about, what its impact is on nature and people and what the government and individuals can do.

A major climate change issues is greenhouse gas emissions caused by forest destruction. Illegal logging and land use change, from peatlands to palm oil plantations are the examples two major deforestation and degradation problem outside Java that factor in significantly in determining the size of Indonesia's carbon footprint.

Hard rainfall that has inundated farmers' rice field – not once but three times in a year has to do with global warming, which stems from greenhouse gas emissions that have raised the temperature of the earth's surface and in turn caused weather and climate changes. Climate change usually occurs due to changes in rainfall patterns, which in turn cause a shift in the seasons. Individuals, including students, could take to minimize greenhouse gas emissions. These include efficient use of household appliances, recycling non-organic and organic waste, and using bikes to commute to work.

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APPENDIX

Transitivity

Key:
P=Process, Pm=material, Pme=mental, Pb=behariboural, Pv=verbal, Pe=existence,
Pcc=circumstantial, Pp=possessive, Pc=causative
A=Actor, G=Goal, B=beneficiary, R=Range, Rc=Recipient
S=Senser, Ph=Phenomena
Sy=Sayer, Rv=Receiver, Vb=Verbiage
Ve=Verbal
Be=Behaver, Bh=Behaviour
X=Existence
T=Token, V=Value, Cr=Carrier, At=Attribute, Atv=Attributive, Id=Identifying
C=Circumstance, Cl=location, Cx=extent, Cm=manner, Cc=cause,
Ca=accompaniment, Cmt=matter, Co=role Ct=time Cp=place

TEXT#1

Global warming and civilization

1. Adverse impacts from global climate change on the earth's ecosystem and human (A) well-been felt (Pm) in the last half century (G). 2. According to Intergovernmental Panel on Climate Change (IPCC) data from 1970-2004 (Ct), 3. the earth's temperature (A) has increased (Pm) by an average of 0.2 degree Celsius per year (Cx).

4. The year from 2001-2010 (Cr) have been (Atv) the warmest 10 year period (At) since the beginning of weather recording in 1850 (Ct). 5. The heat of the oceans (A) increased (Pm) in the second half of the 20^{th} century (Ct).

6. Consequently (Cc), glaciers, ice caps and ice sheets from the Arctic and Antarctic Oceans (A) have recently been melting (Pm), 7. which resulted (Pm) in a mean sea level (G) 8. rise (Pm) from -20 centimeter in 1950 to +5 centimeters in 2000 (Cx).

9. This year (Ct) the earth (S) experienced (Pme) extreme weather (Ph), 10. such as (Co) a deadly summer heat wave in Russia (S) with temperatures soaring to a record 38.2 degrees Celsius (Ca); 11. heavy rains and flood in Indonesia, Thailand, Vietnam and Australia (A) droughts (Pm) 12. that afflicted (Pm) the Amazon basin and southwest China floods 13. (G) that devastated (Pm) Pakistan (G); 14. and drastic changes in oceanic and atmospheric conditions in the California Current Ecosystem (A) brought (Pm) about summertime hypoxia, anoxia and massive fish kills (Cc).

15. If the earth's temperature (A) cannot be maintained (Pm) 16. and increases (Pm) more than 2 degrees Celsius (Cx), 16. a number of catastrophes (A) will occur in (Pm) various parts of the globe (Ct). 17. These (T) will include (Atv) rising sea levels (V) by 1 to 6 meters (Cx), 18. which ( ) could inundate (Pm) coastal areas around the world (G), 19. increased (Pm) flooding and altered rainfall cycles (Cc).

20. Dry seasons (A) will get (Pm) longer (Ct) 21. and wet seasons (A) will get (Pm) shorter (Ct) 22. but more intense (Cm). 23. Heat waves (V) would be (Atv) more frequent (Ct) and dangerous (Cm). 25. Shifting weathers patterns (A) could destabilize (Pm) the world's food supply and access to clean water (G) , 26. and lead (Atv) to mass migration (V) 27. as farmers and fishermen (A) flee (Pm) drought or flood-prone regions (Cp).

28. Globe climate change and its concomitant negative impacts (C) has mostly been (Atv) a result of increasing global emissions of greenhouse gases (At) 29. originating (Atv) from the burning of fossil fuels, deforestation and extreme changes in land use and land cover (At).

31. Yet, few nations, except Indonesia (A), have taken (Pm) serious action (G) 32. to curb (Pm) global warming (G) 33. by legally binding (Pm) themselves (G) 34. to cut (Pm) greenhouse gas emissions (G) 35. as prescribed (Pm) by the IPCC (G).

36. According to the IPCC (Cc), 37. if we (A) were to avoid (Pm) unmanageable catastrophes (G) from global warming (Cc), 38. the emissions rate of greenhouse gases (A) should be cut (Pm) by 25-40 percent in 2020 and 50 percent in 2050 from 1990 levels(Cx). 40. Developed countries (A) should reduce (Pm) their emissions (G) by 80 percent by 2050 (Cx).

41. During the 2009 COP-15 conference in Denmark (Cp), President Yodhoyono (Sy) pledged (Ve) 42. Indonesia (A) would reduce (Pm) carbon emissions (G) by 26 percent from the business-as-usual estimate of emissions in 2020(Cx). 43. Unfortunately, Indonesia's heroic commitment (A) has not enticed (Pm) other nations (G), 44. particularly the two largest emitters of greenhouse gases, the US and China (A), to follow (Pm) suit (G).

45. Rich nations like those in Europe, the US, Japan and Australia(C) are (Atv) reluctant (At) 46. to slash (Pm) their greenhouse gas emissions (G) 47. because emerging nations with high economic growth in the last 15 years, especially China and India, (Sy) have not legally committed (Ve) 48. to reducing (Pm) their carbon emissions (G). 49. In the meantime (Ct), developing and poor nations (S) are worried (Pme) 50. that cutting emissions (A) could hamper (Pm) economic growth (G) 51. they (A) badly need (Pm) 52. to deal (Pm) with unemployment and poverty (Ph).

53. Such rationales, from both rich and poor nations (A), are depicted (Pm) in Garret Hardin's "tragedy of the commons" story Cp), 54. which applies (Pm) to almost all common-property resources (Ph).

55. In the story, a group of medieval English herders (A) keep increasing (Pm) the size of their individual herds (Ph), 56. eventually exceeding (Pm) the capacity of the village commons (Ph) 57. with everyone (A) losing (Pm) their entire herds (Ph).

58. At the time Hardin's paper was published in 1968(Ct), 59. many people (A) found (Pm) the "tragedy" metaphor (G) insightful (Cm) 58. and applicable (Pm) to the world's fisheries (G). 61. Fisheries (A) provide (Pm) a telling example of the common dilemma (G): 62. The resource (Cr) is (Atv) fragile (At), 63. and the fish you do not catch today (A) may be caught (Pm) by someone else (G) tomorrow Ct).

64. But since each fisherman operates with the same rationale (Ct), 65. the users of the fishery-common resource (A) are caught (Pm) in an inevitable process (G) 66. that leads (Pm) to the extinction of the very resource (G) 67. on which they all (A) depend (Pm). 68. Because each user (S) ignores (Pme) the cost (Ph) 69. imposed (Pm) on others (G), 70. individually rational decisions (A) accumulate (Pm) 71. to result (Pm) in a socially irrational outcome (Ph).

72. It (Cr) is (Atv) therefore timely (At) for all citizens and governments of the world (Cc) 73. to join (Pm) hands (g) 74. to significantly cut (Pm) greenhouse gas emissions (G). 75. Although stabilizing atmospheric CO_2 levels (Cr) is (Atv) a staggering challenge (At), 76. it (Cr) is (Atv) certainly doable (At).

77. Recent environmentally friendly technological innovations in forestry, agriculture and fisheries and in mining, transportation, energy and industrial processes (A) have made (Pm) it (G) possible (Cm) 78. to reduce (Pm) greenhouse gas emissions (G) 79. as recommended (Pv) by the IPCC (Rv) 80. and, at the same time (t), maintain (Pm) economic growth (G).

81. With advance in wind turbine design , 82. more efficient solar cells, geothermal, bio-energy and fuel cells (Ca), 83. we (Cr) now (Ct) have (Atv) the basic technologies needed (At) to shift (Pm) quickly from a carbon-based to a hydrogen-based energy economy (Cx). 85. The fuel cell (Cr) is (Atv) a device powered by hydrogen (At) 86. and uses (Pm) an electro-chemical process (G) 87. to convert (Pm) hydrogen (G) into electricity, water vapor and heat (Cc).

88. Hydrogen (T) can come (Id) from many sources (V), 89. including (Id) the electrolysis of water or the reformulation of natural gas or gasoline (V), 90. a process (A) that extracts (Pm) the hydrogen (G) from hydrocarbons (Cc). 91. If the hydrogen (T) comes from (Id) water (V), 92. then electricity from any source (A) can be used

(Pm) 93. to electrolyze (Pm) the water (G). 94. If the electricity (T) comes (Id) from a wind farm, hydropower stations, geothermal power stations or solar cells (V), 95. the hydrogen (Cr) will be (Atv) clean (At) 96. and produced (Pm) without carbon emissions or air pollutants Ca).

97. Curbing (Pm) global carbon emissions (G) by 25-40 percent by 2020 and 50 percent (Cx) by 2050 (Ct) is (Atv) definitely within range (AT). 99. Ambitious though (V) this (T) might seem Id), 100. it (Cr) is (ATv) commensurate (At) with the threat (Ca) 101. that climate change (A) poses (Pm) to our earth and civilization (G).

TEXT # 2

Muslim leaders and prevention of environmental disasters

1. Mankind's domination and rapid expansion on Earth (Rv) has been blamed (Pv) by environmentalists (Sy) as the root of environmental destruction (Vb). 2. However, in both Judeo-Christian and Islam teachings (Cp), man (B) is not only granted (Pm) the right (G) (3. to utilize (Pm) natural resources (G) for the fulfillment of his interest (Cc), 4. but he (Cr) is (Atv) also responsible (At) for the maintenance and caring of the Earth (Cc).

6. Religion and environmentalism (Cr) actually have (Atv) several things in common (At) 7. and can therefore help (Pm) each other (G) 8. to achieve (Pm) the common goal (G), 9. which is ensuring (Pm) a healthy Earth (G), 10. even though they (Cr) may have (Atv) different reasons (At). 11. Religious followers (A) want to keep (Pm) the Earth (B) habitable (G) 12. because the future of humanity (A) depends on (Pm) it (G). 13. Environmental activists (A) want to save (Pm) the Earth (G) for the sake of the Earth (Cc). 14. Both religion and environmentalism (A) require (Pm) a long-term vision (G). 15. Religious devotees (S) know (Pme) 16. that their actions (Cr), be they small or large, will have (Atv) an effect (At) on them (B) in the future Ct). 17. Good deeds (A) will bring (Pm) good results (G) and vice versa (Cc).

18. Both religion and environmentalism (A) forbid (Pm) us (G) 19. to be (Atv) selfish (At). 20. Religion (A) encourages (Pm) altruism (G) 21. by promising (Pm) a reward in the hereafter as well as in the world (G). 22. Social harmony (G) can only be achieved (Pm) 23. when the members of a society (Cr) are (Atv) considerate and helpful (At) to each other (B). 24. Likewise, to solve (Pm) environmental problems (G) 25. altruism (G) is absolutely required (Pm). 26. If people living near upstream rivers (A) pollute (Pm) the rivers (G), 27. people living downstream (A) will suffer (Pm) the consequences (G). 28. If we (A) pollute (Pm) the air (G), 29. the pollutants (G) will be moved (Pm) by the wind (A) 30. and affect (Pm) people (G) in other areas (Ct). 31. On global scale (Cx), countries (A) generally accept

(Pm) 32. that global cooperation (G) is needed (Pm) 33. to overcome (Pm) environmental issues (G).

34. Being altruistic and taking a long-term approach (Cc), 35. both religious devotees and environmentally-committed people (Cr) are (Atv) ready (At) 36. to sacrifice (Pm) their materialistic pleasures (G) for the sake of the environment (Cc). 37. To achieve (Pm) nobility (G), 38. religious devotees (A) must be able to control (Pm) their desire (G). 39. Many religions (Cr) have (Atv) sacrifice rituals (At) 40. and encourage (Pm) their followers (G) 41. to live (Pm) a modest life (G). 42. The Prophet Muhammad and other Prophets (A) live (Pm) in austerity (G). 43. Living a simple life (Cr) is (Atv) the essence of conservation (At). 44. A luxurious life (A) will result (Pm) in resource depletion and environmental pollution (G). 45. Both religion and environmentalism (S) value (Pme) quality of life (Ph) but not extravagance (Ph).

46. Both religion and environmental movement leaders (T) must also be (Id) ready (V) 47. to fight (Pm) for a noble cause (Cc). 48. The majority of people (A) pursue (Pm) a worldly life (G). 49. They (A) strive (Pm) to amass (Pm) wealth (G) beyond their basic needs (Cp). 50. Governments as well as companies (A) always promote (Pm) consumption (G) 51. in order to increase (Pm) economic growth (G). 52. Promoting a modest life (Cr) is (Atv) therefore a daunting task (At).

53. Few people (Cr) have (Atv) the capability and willingness (At) 54. to consider (Pm) long-term goals (G). 55. Asking (Pm) them (G) to sacrifice (Pm) pleasure (G) 56. that they (S) experience (Pme) now (Ct) 57. in exchange for a better future (S) will be (Atv) difficult (At). 58. In short, encouraging (Pme) people ((Ph) 59. to adopt (Pm) a religious path (G) 60. as well as an environmentally sound way of life (Cr) will be (Atv) a never-ending struggle (At). 61. Only those with clear vision and strong conviction (A) can bear (Pm) this task (G).

62. The Indonesian Environment Ministry (A) has insisted (Pm) 63. that it (A) would not delay (Pm) the implementation of 2009 Environment Law (G) 64. as it (S) did not believe (Pme) 65. it (A) would hamper (Pm) the mining of the country's rich mineral resources (G). 66. The ministry (A) also asserted (Pm) 67. that it (A) would not amend (Pm) an article of the law (G), 68. which has created (Pm) controversy (G) 69. as it (G) was initiated (Pm) purely by the House of Representative (A). 70. The statement (G) was made (Pm) 71. in response to calls from the Energy and Mineral Resources Ministry and oil and gas business groups (Cc) 72. for a two year delay over fears (Ct) 73. that the law's tightened standards of emissions and waste water levels (A) could hurt (Pm) oil and gas production (G). (Wiryono, TJP 4/9/10: 7)

Text # 3

Biodiversity, Indonesia and Poverty

The 10th Conference of Parties (COP) of the Convention Biological Diversity (CBD) (G) was held (Pm) in Nagoya, Japan (Cp), from Oct. 18 to 29(Cx).

Since the CBD (G) was introduced (Pm) in 1993 (Cl), this convention (G) is aimed (Pm) at mainstreaming (Pm) biodiversity conservation initiatives and sustainable use of biodiversity (G) on a global scale (Cp).

The CBD (S) also intends (Pme) to promote (Pm) fair and equitable benefit-sharing of biological utilization (G), including (Id) genetic resources (T).

As a "mega-biodiversity" nation (Cr), Indonesia (T) could become (Id) a key player (V) in effort to save (Pm) global species (G). Indonesia (A) could play (Pm) a leading role (R) in developing (Pm) international policies (G) that support (Pm) conservation of tropical biological resources (G). Indonesia (A) could also capitalize (Pm) on expansion of international research collaborations (G) to study (Pm) biology and utilize (Pm) natural products (G).

This strategic position (A), if well played, may result (Pm) in gigantic benefits (G) for Indonesia (B). Remember (Pme), a large proportion of the plant and animal species (Be) that inhabit (Pb) the Earth (Cp) live (Pb) in this tropical country (Cp).

Successful conservation of biodiversity in Indonesia (A) would make (Pm) a significant contribution (Ph) to combating (Pm) the extinction of precious global species (G).

The richness of forest habitats and coral reef ecosystems in the tropics (Cr) provides (Id) the world (B) with incalculable biological capital (At).

Unfortunately, most of this biological wealth (Ph) has not been sufficiently studied (Pme), and as a result (Cc), there (X) remains (Pe) insufficient knowledge of their economic values (Cmt).

In addition to being an important part of the ecosystem (Ca), species diversity (A) may serve (Pm) as a source of income (Co). The exploration, identification, and utilization of biodiversity (A) can lead (Pm) to commercial benefits (G) – presently referred to (Pm) as "bio-prospecting" (Co).

However, an inconvenient factor (Cr) remains (Atv). Many commercial products (G), including (Id) medicines, are derived (Pm) from traditional knowledge of tropical

diversity (A), but are developed (Pm) and commercially traded (Pm) by giant companies (G) based (Pm) in developed countries (Cp).

Ironically, there (X) are (Pe) no benefits (Cmt) for the people (B) who (A) traditionally have been developing and utilizing (Pm) the same products (G).

The great loss to country (T) that are (Atv) naturally home to biological wealth (At) has become (Id) one of the focuses of the current COP (V). The ability to utilize species diversity for Indonesian interests (Ph) must be improved (Pme). But at the same time (Ct), we (Cr) are (Atv) actually in dilemmatic position (At).

We (A) contribute (Pm) to the loss of tropical species (G). Inability to slow the rate of deforestation and prevent loss of coral reef habitats (Cmt) has been seen (Pb) as the main cause of extinction of tropical species (Cc). With no real action (Ca), our diplomacy on biodiversity conservation (G) will not be well-received (Pm) in international forums (A).

The target to save biodiversity in Indonesia (G) could be synergized (Pm) with other programs (Ca). The negation on climate change mitigation (Cr), which include (Id) preventing (Pm) deforestation (G) as an important part of the overall strategy (Co), may become (Id) a good tool (At) for saving tropical forest biodiversity (Cc). Therefore Indonesia's perspectives on REDD (reducing emission from deforestation and degradation) initiatives (Ph) should be changed (Pme).

This scheme (R) should not be only perceived (Pb) as a carbon trading mechanism (Co) that aims to (Pm) reduce carbon emissions (G), but it (Cr) has to include (Id) biodiversity protection as an integral component (At).

Indonesia (G) is also actively involved (Pm) in achieving (Pm) the United Nations Millennium Development Goals (MDGs) (G). In terms of environmental sustainability (Co), the objective of Indonesia's MDGs (Cr) is (Atv) to synchronize (Pm) state policies (A) with sustainable development (G). Decreasing (Pm) the rate of deforestation (G) has been put (Pm) in priority position (Cp). If this objective (Ph) is achieved (Pme), it (A) could notably contribute (Pm) to the conservation of species diversity (G).

Indonesia (Sy) frequently reacts (Pv) negatively to international criticisms of the loss of tropical ecosystems (Vb). This (Cr) is (Atv) understandable (At) because we (Cr) need (Atv) development in order to alleviate (Pm) poverty (G). As a consequence (Cc), tropical ecosystems (G) have been converted (Pm). This (Cr) is (Atv) actually the challenge of millennium development (At): Reducing (Pm) poverty (G) on the one hand goals (Cp): while saving (Pm) the environment (G) on the other (Cp).

This (Cr) involves (Atv) two interesting factors (At). First, we (S) believe (Pme) that the exploitation of biological resources (Cr) will have (Id) significant effects (At) on efforts (A) to fight (Pm) poverty (G). But in fact (Cmt), the massive exploitation of natural diversity (A) has not significantly minimized (Pm) Indonesia's poverty rate (G).

The history of natural forest exploitation (Cr) is (Atv) a fine example (At). Before the golden era of natural forest concessions ended (Cl), its contribution to the improvement of the lives of people living around forests (Cr) was not (Atv) very real (At). On the contrary (Cmt), massive exploitation (A) created (Pm) disasters (G). The recent flood in Wasior that killed hundreds of people (G) was partly caused (Pm) by deforestation (A).

The second factor (Cr) is (Atv) that the traditional methods of utilizing biodiversity (Be) also fail (Pb) to uplift (Pm) living standards (G). The living conditions of indigenous people in forest areas (Cr) have become (Id) worse (At) as these people (Cr) become (Id) more marginalized (At). This (Cr) is not (Atv) only because of external factors (AT), such as plantation expansion and forest exploitation (Cm), but also the increasing population (Cc).

For example (Cm), reports (A) recently found (Pm) that more people from *Anak Dalam* tribe in Jambi (A) are leaving (Pm) the forests (G). Ironically(Cm), most of them (Cr) then become (Id) beggars (At) in the city (Cp).

In short (Cmt), we (S) have to think (Pme) of a regime of utilization of biological resources (Ph) that is (Atv) sustainable (At) and contribute (Pm) to poverty alleviation (G). One approach (Cr) is (Atv) to increase (Pm) bio-prospecting activities (G). Scientific exploration and research (Cr) has to be prioritized (Atv).

Local knowledge of biodiversity (At) also must be accommodated (Atv). Development of biodiversity prospects (S) will not only improve (Pme) our awareness of the importance of biological resources (Ph), it (A) will produce (Pm) financial benefits (G) as well (Ca). (Yansen, TJP, Nov.1,2010: P7)