A Review on the Research of English Reading Theories
—A Perspective from Second Language Acquisition

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Abstract

In Second Language Acquisition, reading is a fundamental part that might influence the subsequent acquisition of listening, speaking, and writing. From information processing theory and redundancy theory to Schema Theory of Reading and discourse analysis, many researchers have made great achievements to the study of reading and influence a lot the Second Language Acquisition. This paper made a brief review on the research of English reading theories.

Keywords: Reading Theory, Second Language Acquisition.

1. Introduction

Reading is a psycholinguistic guessing game, a complex psychological activity process (Goodman, 1967). It is a positive and creative behavior of readers and also a process of choosing, classifying and interpreting information. Readers receive information through a discourse by visual access and transforms surface structure into deep structure through brain to approach the writer's intentions of the discourse. Widdowson (1979) proposes that reading is a process in which readers get language information through a written material and actively construct knowledge to understand the information. Richards (1998) proposes that reading is initiative for readers to use background knowledge, schemas, vocabulary, grammar knowledge, mother tongue knowledge and personal social experience to understand the text. With a sharp increase of research on second language reading in 20th century, the definition of reading turns to focus on the communicative relationship between readers and texts. Silberstein (2002) introduces that reading is a complicated cognitive process in which the relationship between readers and texts is interactive. Whether a reader can receive information that the writer conveys depends on whether he/she has similar attitudes, language, experiences, values and beliefs with the writer (Nuttall, 2002). Many scholars have proposed and developed different theories concerning reading. These theories discover the nature of reading from different aspects and represent different tendencies and emphases on reading research. The development of English reading theories is closely related to linguistics, especially applied linguistics and psycholinguistics. All these theories have influenced a lot the SLA teaching practice.

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2. Reading Theory

2.1 Information Processing Theory

From traditional semantics, Gough (1972) proposes the information processing theory which revealed the whole reading process from reading vocabulary to understanding meaning. It is also called a bottom-up model: letter-vocabulary-phrase-sentence-paragraph-passage, by which the reading process is described as a series of independent but coherent steps: alphabet-vocabulary-clause-sentence-paragraph-passage. This model emphasizes the transition of information form lower level to higher level where the information can be further processed. The process of information in each level is independent and interrelated. This theory believes vocabulary is key to reading comprehension, which is also called text-based model. Reading comprehension is based on correct input of linguistic symbols which can be acquired independently and reconstructed like blocks of a building. Reading process is a decoding process, a meaning reconstructive process from recognizing the lowest level of linguistic units such as words or phrases to the highest level of linguistic unit of passage. This static and linear reading model received a lot of critics since its inception, for its resulting in lower reading speed and 'tunnel vision' of readers.

2.2 Redundancy Theory

Smith (1971) and Goodman (1987) analyzes first-language reading process from a psycholinguistic perspective. Smith (1971) proposes Redundancy theory that reading information comes from vision, audition, syntax and semantics which are overlapped with each other in different ways. This is called 'redundancy phenomenon'. Readers can depend less on visual information if they can deploy information from other three resources. He also indicated that 'redundancy phenomenon' appears at every level of language (including levels of alphabets, words, sentences and passages). Readers can reduce their need for visible information of reading passages if they can utilize other information resources such as World Knowledge. Goodman (1987) proposes a psycho-model of readers' relying on previous syntactic and sematic knowledge, also called a 'top-down' model. Goodman names it 'a psycholinguistic guessing game' based on cognitive linguistics. Reading comprehension depends more on readers' background information of a passage. Reading process is an endless and cyclic process beginning from selection, prediction and examination, and ending with demonstration or modification. Effective reading relies on accurate judgement with as little information as possible from input rather than on exact recognition of all linguistic components (Goodman, 1973). This psycholinguistic theory of reading arouses tremendous echoes in language research.

Many theoretical linguists become very interested in this theory and they have conducted some researches on second language reading and foreign language reading with this theory. They have made achievements on the following three aspects:

1. Reading process is a positive cognitive process where readers communicate with passages or writers just like a face-to-face conversation and readers react to reading materials by associating their previous linguistic knowledge and background information with written words (Clarke & Silberstein, 1977).

2. The aim of reading is to acquire meanings, which is determined by intended usages of words and sentences in context instead of some specific words and sentences. Widdowson (1978a) stated that sentences

were valuable only when used. It is more important while reading to focus on the use value of language under specific conditions than to understand linguistic features of a passage in order to understand deep implications. Widdowson's point reveals the relationship between language and meaning, which emphasizes the significance of discourse comprehension.

3. In addition to information provided by reading materials, invisible information can play a very important role in second language and foreign language reading comprehension.

Coady (1979) proposes a second language reading presumption based on psycholinguistic theories: the background knowledge and conceptual abilities of a second language reader interact with his/her process strategies, which leads to comprehension of reading materials. Psycholinguistic model helps people to further understand the act of reading and promotes the research on reading to such an extent that it is even called a top-down revolution. This model is accepted by many foreign language teachers since it stresses the subjectivity of readers, but it exaggerates the influence of background knowledge and ignores the importance of basic skill of recognizing vocabulary and grammar, hence a total opposite of information processing theory.

2.3 Interactive model and Schama Theory of Reading

Rumelhart (1977) proposes a comparatively more reasonable interactive model, which stresses that reading is an active, both bottom-up and top-down process with interactions of vocabulary, syntax and semantics. This is the basis for interactive model and Schema Theory of Reading. It is a complex process involving application and processing of both linguistic knowledge and background information. Reading is treated as an organic functional system. Readers coordinate different levels of cognition and different possible factors to achieve effective reading comprehension. Many researchers hold that higher-level information can influence the processing of lower-level information and the results of the information processing at any level can influence immediately and spontaneously on the information processing at any other levels. Interactive model contains not only a single model but a series of models provided by different scholars, among which the main five models that may help understand reading process are interactive-action model by McClelland and Rumelhart (1981), interactive-compensatory model by Stanovich (1980), bilateral cooperative model by Taylor (1983), automatic-processing model by LaBerge and Samuels (1974) and verbal efficiency model by Perfetti (1988). Interactive-action model by McClelland and Rumelhart (1981) is the most representative one which believes that orthographical, lexical, syntactic, semantic and visual information can interact with each other and influence consciousness while reading. Based on this theory a new reading theory came into being: Schema Theory of Reading.

'Schema' comes from German Gestalt Psychology, which is owed to a psychologist and Artificial Intelligence scientist F. C. Bartlett. Schema is a reflection on past experience or an active organization of past experience (Barlett, 1932). Schema theory wass first proposed by F. C. Barlett in 1930s. It holds that schema is the basis of cognition, a scaffolding stored in one's memory to express general concepts. Before one accepts information, numerous knowledge (namely schema) has been memorized in his/her brain, including personal experience, facts, acquired knowledge, etc. They are processed into different categories and stored in the brain and form a schema net, which provides a frame of reference to the owner. In 1980s,

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some psycholinguists introduced Schema Theory to foreign language teaching to explain the mental process of reading comprehension, hence the Schema Theory of Reading. Schema Theory of Reading fully demonstrates the interactive nature of reading process. The already-acquired knowledge is called background knowledge and 'Schema' refers to the knowledge structure readers acquired previously and stored in their memories. According to Schema Theory of Reading, a reader coordinates different levels of cognition and different possible factors to achieve effective reading comprehension. Reading comprehension is a process during which schemas in a reader's mind interact with text information of reading materials. One can quickly refer to a specific schema in his/her memory and test, predict and modify information while reading and then, understand a reading material correctly. When schemas (also background information) connect and pair with information provided by reading materials, a reader can understand the contents. This involves both a bottom-up processing model and a top-down processing model, and they are happening at the same time and on all cognitive levels. In the process of 'bottom-up', language information in materials activate schemas in readers' minds while in the process of 'top-down', the activated schemas can help readers apply already-acquired knowledge to anticipate, verify and disambiguate texts and therefore promote their decoding, acquisition and memorization of texts (Carrell, Devine, & Eskey, 1988).

Generally speaking, 'Schema' is divided into three types:

1. Linguistic schemata – referring to knowledge of vocabulary, grammar, and syntax of a passage, also the basic linguistic knowledge. Understanding and grasping basic linguistic knowledge is the perquisite of reading.

2. Content schemata – referring to the background knowledge about contents, namely, reader's familiarity to the theme of a passage. Research showed that readers' familiarity to the theme would directly influence their reading comprehension. Content schema can compensate linguistic schema to some extent. Activating content schema plays a key role in reading comprehension.

3. Formal schemata – referring to structural knowledge of different passages, namely, reader's familiarity to genres. Effective application of formal schema may help readers predict the structure of a passage and the logical relationship among paragraphs, clarify writers' ideas and reasoning and enhance their reading comprehension.

The research on schema theory promoted the adaption of pure top-down reading model, hence the interactive reading model. Some researchers held that the top-down model stressed too much on the use of background knowledge but ignored lower-level techniques such as quick recognition of words and sentence structures. Grabe (1991) pointed out that experienced readers read fast not because they are good at guessing but because they can quickly distinguish between a multitude of vocabulary. Interactive theory attaches equal importance to higher level reading skills such as the application of schema knowledge and lower-level reading skills such as quick decoding. In actual reading process, two levels of skills can compensate for each other, so, it is necessary to provide necessary background knowledge, cultural knowledge, and related contents to help readers improve reading comprehension. Some researchers investigated the effectiveness of

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interactive reading model.

Bo Fu (2007) studied the effectiveness of interactive reading model on reading comprehension guidance in order to verify whether this model was helpful in improving learners reading comprehension ability and language proficiency. Jingjing Wei (2010) compared the effectiveness of interactive reading model and grammar-translation method among higher vocational college students. Both studies found that interactive reading model would be more beneficial to the improvement of students reading ability. The research made by Baohong Chen (2010) also showed that the interactive reading model was an effective reading model which could significantly improve English reading ability of high school students. Jiazhuo Su (2010) explored the teaching results of interactive reading model in Chinese college English education and found that the interactive reading model could be more effective in enhance students' comprehensive reading ability than traditional translation teaching method. Both teachers and students preferred to use interactive reading/teaching model, and interactive reading model was used more frequently than bottom-up or top-down reading model and showed more advantages.

3.1 Discourse Analysis

Discourse analysis was created by American structural linguist Harris in his article titled Discourse Analysis in Language magazine in 1952. He tried to analyze the inner conjunct ways between sentences from the angel of discourse which surpassed lexical and syntactical levels and he believed that language happened within coherent discourses. Harris discussed two methods of discourses analysis: one was that language could be depicted beyond the constraints of sentences, which concerned the analysis of conjunct rules between sentence; and the other was that linguistic behaviors and nonlinguistic behaviors could be connected, which concerned the relationship between language and culture, discourse and social context.

Discourse analysis theory (DAT) was developed in 1960s based on linguistics, semiotics, psychology, anthropology, sociology, literature and other disciplines (Huang, 2001). It is the study on the coherence of discourse (Halliday and Hasan, 1976), on the language use for interpersonal communication (Widdowson, 1978b) which attaches importance to discourse and context, on the spoken or written language (Stubbs, 1985), and on the context meanings and grammatical rules that can help achieve a deep understanding on discourse through analyzing exterior and interior implications (Gee and Handford, 2003). Halliday and Hasan (1989) explain from the angle of systemic functional grammar that discourse analysis is a deep analysis on the micro aspects of language use such as conjunction and coherence of discourse and semantic structure potentials, etc. and discourse analysis must be based on grammar and connect language structures with language functions. Tanen (1989) holds that discourse analysis is not a specific analytical method or any combination of those methods, but research on units of language use surpassing lexical constraints which can happen in any discourse.

These different definitions look into discourse analysis from two aspects: one is that discourse analysis is a static depiction of the structure of supra-sentential units; the other is that discourse analysis is a dynamic analysis of meaning transition in communication process. Discourse analysis research on the one hand analyzes the structural formation of supra-sentential utterances and social interactions, and on the other hand

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reveals the process in which communicative participants understand meanings in context. The connotation of discourse relies on the context. The discourse and the context depend on each other. Discourses of any genre have to conform to the grammar and be coherent in semantics, both pragmatically and linguistically. Discourse analysis theory reveals the nature and the rule of language objectively.

Discourse analysis of reading includes analysis on discourse patterns, discourse context, discourse cohesion, discourse coherence, and semantic potentials. Discourse patterns concerns thinking patterns of English language which holds that language structure characteristics are formed under the influence of language thinking patterns and different combinations of lexical systems and grammatical systems demonstrate different language thinking patterns. Discourse context concerns the language context of a discourse which holds that the context of a discourse needs to be further studied. It is a very complex connotation including context of situation, social context, linguistic context, natural context, context in a text and register etc.

Discourse cohesion and discourse coherence concern the inner logistics within a discourse. Cohesion refers to combination of sentences or paragraphs under a specific set of grammatical rules and can be reviewed by discourse markers, including lexical cohesion, grammatical cohesion and logical cohesion. Coherence is a significant method to guarantee the inner consistency of meanings of a discourse. Van Dijik (1977) holds that coherence is a semantic feature of a discourse which depends on the explanation of a single sentence and the relation between explanations of other sentences. Readers can make logical reasoning on underlying meanings of a discourse (Crystal, 1987).

Cohesion demonstrates consistency and integrity of the form in a discourse while coherence demonstrates the consistency and integrity of the meaning in a discourse which can help realize the communicative function. Semantic potentials concern the researches on literal meanings of a discourse. According to Halliday's systemic functional grammar, meaning is the result of mutual integration of human experience on the material level and the level of consciousness. There is an interface between the plane of content and the plane of expression after the integration. The understanding of meaning is actually a process of choosing possible meanings of a text based on linguistic forms (vocabulary and grammar). Linguistic forms do not have any meanings but basic carriers of meanings while context of situation social cultures, tenor of discourse, scope of discourse and discourse patterns are significant factors that influence semantic potentials.

Reading model based on discourse analysis holds that reading process is a dynamic interaction of discourses, readers, and writers. Writers deliver writing intentions and information through the discourse pragmatically and grammatically and readers understand the discourse-by-discourse analysis. Discourse analysis reading model emphasizes not only the formation and the function of languages but also the influence of background knowledge on reading comprehension. It holds that the nature of reading is a dynamic communication process. The teaching model of reading under the guidance of discourse analysis theory can both enrich teaching contents, enhance the practicability and the functionality of reading courses, and cultivate the cross-cultural awareness of students and promote their understanding ability and organizing

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ability while improving their linguistic ability (Wang, 2001).

Apart from the mainstream influential reading theories mentioned above, Sadoski and Paivio (2001) propose a more comprehensive reading theory – Dual Coding Theory, which holds that in the reading process readers use respectively or simultaneously two representational systems – one verbal, and the other non-verbal. It explains human behavior and experience in terms of dynamic associative processes that operate on a rich network of modality-specific verbal and non-verbal or imagery representations. When processing linguistic codes, readers might produce corresponding imagery and emotional reactions. Directing readers to create images in the process of reading might help improve the accuracy of reading comprehension and memory.

4. Conclusion

Reading theories reveal readers' psychological features and mental rules while reading and analyze the relationship of influential factors. Those theories can both benefit the teaching of foreign language reading and the teaching of languages. Some researchers find that exact and quick recognition of vocabulary is the most important predictor of reading ability especially for young readers (Adams & Bruck, 1990), and the ability of semantic recognition accounts for a large proportion of college students' reading ability (Cunningham et al, 1991). That is why we cannot reject a specific reading model or theory. However, because of the restraint of historical and social factors and different levels of people's recognition of language and language learning, each reading model or theory demonstrates partial specification on reading process.

Different reading models and theories portray reading process from different angles. They are all lop-sided because of emphasis on different aspects and their implications on teaching process are partial as well.

In teaching process, those models or theories should be flexibly applied according to students' actual language levels and teaching demands. Teachers need to grasp the nature of those reading theories instead of applying them mechanically. Suzhen Yang (1995) proposes that reading process is an interactive process between readers and reading materials or writers. Meanings do not leech on linguistic forms nor wait passively for being accessed by readers. Readers have to utilize different knowledge to acquire meanings and understand reading materials by predicting or reasoning.

In reading process, readers' relative knowledge about the background, cross-cultural knowledge and structures of reading materials has equal importance to linguistic knowledge. Sufficient linguistic knowledge, quick recognition of semantics, background knowledge and the application of related knowledge were key to effective reading.

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