**Language processing and second language development: processability theory.** By
Manfred Pienemann. (Studies in bilingualism, 15.) Amsterdam, Philadelphia: John Benjamins
Publishing Company, 1998. Pp. xviii, 366.

This volume constitutes a major development in Second Language Acquisition (SLA)
theory and practice, in which the development of Processability Theory (PT) is presented, and its
validity demonstrated in numerous SLA studies, including those among learners of English,
German, Swedish, and Japanese.

P identifies a "hierarchy of processing procedures" used by learners to acquire a second
language, which is implemented into Lexical Functional Grammar (xvi). The central hypothesis
of PT holds that SLA requires acquiring the "*procedural skills*" needed to process the language
(1). PT states that these procedures constitutes an assembly of components parts that follow an
"implicational sequence," in which the lower level processing procedures are requisite for the
functioning of higher level ones (7). This accounts for the often-observed phenomenon that,
even when learned, target language rules, morphology, etc., may not appear in learner speech for
some time. Thus a learner's interlanguage (IL) can be described as "the sum of all the rules the
learner has acquired up to a certain point" (45).

P rejects the "serial processing view" that language production occurs in linear order,
demonstrating that during speech, processing operations occur "automatically and in parallel"
(57-8). He also shows that the "*processing complexity*" hypothesis, i. e., that complex operations
take longer to process, is inconsistent with "automatic processing," during which conceptualizing,
lexeme selection, and grammatical functions occur simultaneously (67-9). Thus it is not a
function of processing time, but the position of the procedures in the hierarchy that makes it
impossible for the learner to process complex structures (87-8). P shows, e. g., that the

acquisition of morphology from the standpoint of a single lexical entry (dog, dogs;  man, men), a phrase (those dogs), and across phrasal boundaries (those dogs eat) evolves in the sequence implied in the hierarchy, and PT assigns each process of morphology acquisition to a position in the hierarchy (154).  That 'those dogs eat' is more complex than 'those dogs' is incidental to the fact that rules that cross phrasal boundaries are acquired after those that operate within a phrase.  This principle predicts learner progress, which is of interest to curriculum designers, and renders quantitative acquisition criteria (counting mistakes and assigning per cent values) "completely arbitrary" (304), an important development in assessment.

P argues instead that a "distributional analysis" of learner performance data makes possible a "dynamic description" of IL development (138 f).  For example, oversupply and undersupply of English plural (–s), are not merely counted, but each error is analyzed for the rule involved in the context of its occurrence, and then assigned a position in the hierarchy.  A learner may correctly supply 60% of the plural (-s) in a sample;  analysis could show that most of the errors occur in the context of subject-verb concord, e.g., *Those dog eat*.  These data would show that the learner had acquired plural (-s) rules in lexemes and noun phrases but not in subject-verb concord.  Such analysis is essential in evaluating learner speech data and assessing the competence of the learner.

Other important contributions within PT include the "steadiness hypothesis" (273 f) and "Hypothesis space (231 f).  The "steadiness hypothesis" says that each level of IL processing in the hierarchy emerges in the speech of the learner, and is steady, after the fundamental processes are acquired, yet levels of accuracy in production may fluctuate because of "the specific lexical requirements produced by the communicative task" (308).  A learner may have acquired English

plural (-s), yet supply it inappropriately, as in *informations.   Plural (-s) has been acquired;  the sub-category, mass noun, for 'information' has not.

"Hypothesis space" states that different errors in learner-produced language structures may occur "horizontally," but that they are characterized "vertically," by the hierarchical relationship they are based on.  A range of erroneous variations may occur in a learner who has acquired subject-verb-object rules, but who has not yet acquired the rule that auxiliaries occur as the second constituent in English *wh* questions: "Where he going?  Where is going?  Where he is going?"  Each appears to be a distinct error, yet all involve non-application of this "Aux-2nd" rule (231 f).  This provides a significant index of learner acquisition, providing an analysis of which rules, relevant to which position in the hierarchy, the learner has acquired.

P provides a rich discussion of background and development across disciplines, including philosophy, logic, physiology, biology, cognitive and developmental psychology, and linguistics and SLA, in the development of PT, and his bibliography (341-58) reflects a thorough consultation of a wide range of sources.

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