RESLA 22 (2009), 89-106

THE UNIVERSAL CHARACTER OF THE *DEC–>PRO* COGNITIVE SEQUENCE IN LANGUAGE LEARNING AND TEACHING MATERIALS

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ABSTRACT. *Activity sequencing patterns in teaching materials have traditionally been absent in academic discussions and have received no attention by researchers and language teaching practitioners. More recent studies on cognitive knowledge acquisition suggest, however, that pedagogical sequencing is relevant and may severely affect efficiency in the learning of foreign languages. If knowledge acquisition is governed by specific patterns, the learning –and hence teaching– of foreign languages cannot but comply with those patterns. In this article we will firstly begin with two well consolidated theories on knowledge acquisition –rationalism and empiricism–, and associate them to the general cognitive models most widely recognised nowadays, particularly Anderson's ACT (1983, 2005). Secondly, we will investigate the types of sequences detected in three samples of teaching materials.*

The analysis will be carried out comparing the sequencing of activities in sample lessons against the sequencing patterns governing knowledge acquisition. Such a comparison will faithfully indicate whether teaching materials fit or not the general model of knowledge acquisition.

KEY WORDS. *Teaching materials, foreign language teaching, SLA, activity sequencing patterns, patterns of knowledge acquisition, cognitive psychology, declarative knowledge, procedural knowledge.*

RESUMEN. *Tradicionalmente, los patrones de secuenciación de actividades en los materiales de enseñanza de lenguas no han formado parte de los debates académicos; asimismo, apenas si han recibido atención por parte de investigadores y docentes. Estudios cognitivos recientes sobre la adquisición de conocimiento sugieren, sin embargo, que la secuenciación pedagógica es relevante y puede afectar seriamente la eficiencia del aprendizaje de lenguas extranjeras. Si la adquisición de conocimiento está condicionada por patrones específicos, entonces el aprendizaje de lenguas extranjeras –y por tanto, su enseñanza– deberá necesariamente ajustarse a dichos patrones. En este artículo partiremos, en primer lugar, de dos teorías consolidadas sobre la adquisición de conocimiento –racionalismo y empiricismo– y las asociaremos a los modelos cognitivos*

generales más asentados en la actualidad. Nos centraremos particularmente en el modelo ACT de Anderson (1983, 2005). En segundo lugar, investigaremos los tipos de secuencias detectadas en tres muestras de materiales para la enseñanza de lenguas extranjeras.

El análisis se llevará a cabo mediante la comparación entre la secuencia de actividades en unidades de los manuales tomadas como muestra y los patrones de secuenciación que condicionan la adquisición de conocimiento. Dicha comparación indicará si los materiales de enseñanza de lenguas se ajustan o no al modelo general de adquisición de conocimiento.

PALABRAS CLAVE. *Materiales para la enseñanza de lenguas, enseñanza de lenguas extranjeras, ASL, patrones de secuenciación de actividades, patrones de adquisición de conocimiento, psicología cognitiva, conocimiento declarativo, conocimiento procedimental.*

1. INTRODUCTION

It is commonplace to state the complexity of language as a system of communication. But learning foreign languages has too often been considered a simple and easy task, as the principles enunciated by some teaching methods seem to assume. The Grammar Translation method relies on the prevalence of the deductive approach (explain first, understand the rules of the system and practice later); the Direct Method subscribes to the inductive approach (practice is what you need, conscious understanding is not necessary); the Audio-Lingual Method departs exclusively from an inductive standpoint; at the same time it declares that deductive teaching hinders learning. Still, this apparent simplicity of the principles does not always match classroom practices and the teacher's action. Direct Methodists used to add explanations on to the language they taught. Audiolingualists used to start the lesson with dialogues which served the purpose of introducing structural and grammatical content, and the patterns that underlay most practical exercises adjusted to a well planned selection of meaningful structures. In the analysis of the teaching practice there is indeed a real mismatch between the principles enunciated by leading or fashionable methods and classroom practices detected in the teaching materials or in the activities implemented by teachers themselves (Cerezo 2007).

In this paper we will investigate whether there is a correspondence between two pillars in the *learning/teaching* process: the general pathway our mind adjusts to when acquiring knowledge, on the one hand, and the adequacy of *L2 teaching/learning materials* to such a pathway or pattern, on the other. This adequacy is determined by means of the *activity sequences* present in language materials, an aspect which has been traditionally absent in academic discussions and has virtually attracted no attention from scholars and teachers. Nevertheless, the question we pose above is of paramount importance, since it is to be expected that efficiency in learning is better achieved if the process followed by learners adjusts to the process human beings are conditioned to follow by nature.

2. THE NATURE OF KNOWLEDGE

We assume that learning a language implies the acquisition of knowledge. It is therefore relevant to analyse what knowledge is. Scholars and philosophers have dealt with this problem since Plato and Aristotle. There is ample agreement in assuming two kinds of knowledge: *declarative* and *procedural*. Declarative knowledge is factual knowledge and encompasses any cognitive content which somebody holds as true. In more simple terms, if somebody believes that Spain is located in Europe, it means that the proposition 'Spain is located in Europe' is true. Aristotle offers a transparent definition of truth -a necessary condition of knowledge- when he states that '*to say of something which is that it is, or of something which is not that it is not, is true'*.

Declarative knowledge is defined as 'knowledge-that' and is complementary to *procedural knowledge*, or 'knowledge-how'. A typical example of declarative knowledge is readily illustrated in the field of mathematics: it is known *that* 4+4 = 8. At the same time, we refer to procedural knowledge when we know *how* to add two numbers, such as 4+4, in order to get a specific result. Once procedural knowledge is fully automatized, it does not require thinking about what you do. In *language acquisition*, to gain this stage of 'automatization' means that you have reached a good command of the language. Both types of knowledge are widely accepted by contemporary scholars and are taken as a basis in debates on how knowledge is acquired (Anderson 1983, 2005, among others). We will depart from this assumption in determining the *patterns of language acquisition*.

3. THE ACQUISITION OF KNOWLEDGE

The question of knowledge acquisition has been approached by scholars from different perspectives and has triggered different theoretical constructs. Two of them deserve to be mentioned in this study: *empiricism* and *rationalism*.

Empiricism emphasizes the role of experience all along the acquisition process. Experience results from the perceptions we receive through our senses. Greek philosophers referred to 'phenomena' as the basis of science. But the doctrine was clearly formulated by J. Locke (1632-1704), in the late 17th century, in his *An Essay Concerning Human Understanding* (1689). The idea of the human mind as a *tabula rasa* (a kind of 'blank slate', with no information at all on it) is firmly taken as the original state of human beings when they come into this world (the term was older and was already found in the Persian philosopher Avicena in the 11th century). It is through experience, they affirm, in contact with the outside world, that the mind gains knowledge. Empiricism rejects the theory of *innate ideas*; everything we have or we know must have a reference to experience.

Empiricism opposes *rationalism* and could not be fully understood unless it is contrasted against the latter. The empiricism of David Hume (1711-1776), another key scholar within this theory, is directly focused against Descartes (a rationalist). He states that all knowledge derives from sense experience. It is particularly interesting to

emphasize that in Hume's theory people's 'ideas' derive from their *impressions*. An *impression* corresponds roughly with what we call a sensation; or rather the mark that the outside experience leaves in our mind. The fact of remembering or imagining such an impression equals 'to have an idea'. In this model, therefore, an idea is a barely perceptible copy of a sensation (Hume 1902 [orig. 1748]).

Rationalism is often assumed to be radically opposed to empiricism. Lacey (1996: 286) states that rationalism is 'any view appealing to reason as a source of knowledge or justification'. Perhaps it is more accurate to follow Bourke (1962: 263) when he writes, in more technical terms, that it is a method or a theory 'in which the criterion of the truth is not sensory but intellectual and deductive'. In other words, instead of experience, *reason* is at the forefront and prevails over other ways of acquiring knowledge. A more radical position is to consider that reason is the unique path to knowledge (Audi 1999: 771). The acquisition of knowledge in the rationalist theory is connected to *a priori* processes, i.e. independent from experience. Concepts, therefore, are there before experience. The fact that concepts are innate or part of the structure of the human mind, or the complementary view that concepts exist independently of the human mind (following Plato's dichotomy) exerts an important and decisive influence on the nature of knowledge and also on its acquisition: deductive processes are at the core of rationalism, while inductive processes are central to empiricism. Still, rationalism and empiricism have not been considered radically exclusive the one from the other by all scholars: Locke himself admitted that some knowledge (e.g. God's existence) could be reached through either intuition or reasoning or both. Descartes, even if he states that reason alone may determine knowledge, independently of the senses, also admits that other types of knowledge (e.g. the knowledge of physics) requires experience of the world, and this can only be reached through the experimental method.

Empiricism or rationalism, or a combination of both, lie at the basis of most theories of language acquisition. Hence, *language acquisition*, a facet of *knowledge acquisition*, participates in most of the problems posed by knowledge acquisition theories and shares most of its doubts and truths. In traditional linguistics and *language learning/teaching*, rationalism has clearly prevailed. One of the most salient and recent theories in this respect is Chomsky's generative theory; but one cannot forget the school of Port-Royal and the so called 'traditional grammar', which have permanently stressed the role of reason and mind in *language acquisition and learning*. At the same time, practicing with dialogues, talking (the Direct Method devised by Gouin or Berlitz), or pattern practice (the Audio-Lingual Method), subscribe to empiricism and 'experience': they rely on learning and its consolidation via practice, not via reasoning.

4. Types of knowledge and language learning

Among the multiple cognitive theories that emerged during the last quarter of the twentieth century (see Johnson 1996, for a review), we have selected Anderson's ACT

(*Adapting Control Theory*) Production System[1] (Anderson 1982, 1983, 1987, 2005), as the skeleton for our analysis. Anderson's model has been applied to *SLA* by O'Malley, Chamot and Walker (1987), Johnson (1994, 1996); DeKeyser (1997, 1998). DeKeyser (1998: 48) remarks that this is the most widely recognised framework of skill acquisition in *cognitive psychology*. It assumes that foreign language learning is analogous to other types of complex cognitive skill acquisition (such as geometry, mathematics, etc.) in terms of the mental processes and knowledge representation involved.

In Chapter 2 of his 1983 book, Anderson assumes the two categories of knowledge mentioned above: *declarative* and *procedural*. And what is more relevant here: he describes how declarative knowledge is or can be proceduralized. This is an important step, since only *procedural knowledge* leads to cognitive skills (in our case, the skill to use a language). It cannot be strictly said that Anderson is empiricist or rationalist, but rather gestaltist, a theory that proposes that the operational principle of the brain is holistic, with self-organizing tendencies; or, that the whole is different than the sum of its parts. Bruce, Green and Georgeson (1996), for example, conclude that the Gestalt Theory is descriptive rather than explanatory and it cannot be truly called a theory. But it is also true that the holistic approach exceeds empiricism and rationalism and seems to match well the way we human beings operate and act. In terms of *knowledge and language acquisition*, Anderson offers a comprehensive and realistic model.

The stage of *declarative knowledge* is to be related to *rationalism*, in two ways: (i) reason plays a key role in the acquisition of knowledge and (ii) in teaching situations, the object of knowledge (*what*) is most often planned, structured and presented so as to favour its conscious processing. Specifically in the field of *language acquisition/learning*, declarative knowledge (from now on *DEC*) is knowledge about things, facts and rules of language; these elements constitute a kind of a *data base.* A *program* (= rules) for applying the data works on such a data base. Johnson (1996) illustrates the functioning of the declarative system with a foreign language learning example linked to the formation of the present perfect in English. The related rules are kept in memory and employed every time as needed. If the present perfect of "he talks" was required, learners would recourse to memory concerning how to form the third singular of "have", and would follow "he has" with the participle of "talk" formed by adding "-ed". In this model, *DEC* is *economical*, since a rule is immediately available for any given purpose, and it has an outstanding *generative capacity*. A student has access to the device capable of forming the present perfect for any verb, even if it is unknown. An important drawback is that declarative processing requires time in the working memory. Criado (2008a) also draws attention to the fact that declarative knowledge is not always acquired in a single individual process when it is formally taught. This phenomenon depends on the nature of the content to be learned. Whilst declarative knowledge of vocabulary seems to be grasped without any intermediate phases if explicitly focused upon, the learning of declarative knowledge of grammar may undergo an intermediate phase (*dec*) before it is completely acquired (*DEC*). See Tables 2-4 on pages 9, 11, 12 and 14 for a related illustration.

Procedural knowledge (PRO) may be related to empiricism, insofar as (i) repetition is at the base of proceduralization, (ii) full proceduralization or automatization derives from use, assures fluent communication and may get rid of *DEC* (i.e. there is no need to think about the rule to be applied, since a piece of knowledge is ready for use). *PRO* is represented in our memory as 'productions' (Anderson 1982) or 'procedures for action' (Johnson 1996). Returning to the example given above, in the formation of the past of the verb 'talk', a specific program directly informs the student that the past of 'talk' is 'talked'. Thus, the need for applying a rule is obviated and the advantage for using the language is evident: the working memory is liberated; the student has direct access to the past because 'talk + past' is readily associated to 'talked'. However, as Johnson (1994, 1996) warns, learning should not rely on *PRO* alone. This is due to its high risk nature: productions are very difficult to modify once they have been automatized, which could lead to their fossilization. Therefore, neither *DEC* nor *PRO* should be absent in the learning process.

In language teaching, *PRO* has a clearly direct bearing on those methods that advocate practice and reject reasoning as a means to acquire and consolidate learning. Similar to the declarative system, in formal teaching the mastery of procedural knowledge may entail an intermediate or developing phase (*pro*) before fulfilling its complete acquisition (*PRO*). See Tables 2-4 again for an illustration.

The categories of knowledge mentioned may be associated to theories of knowledge acquisition and to methods in language acquisition/learning, as shown in Table 1 below. It should be taken into account that, although we acknowledge that inductive learning can also occur with the learning of rules, by *inductive* in this table we refer to "practice-based learning".

Declarative knowledge	*Rationalism (explicit)*	Methods focused on reasoning, learning of rules, presentation of well planned and arranged materials, etc. (e.g. *Grammar Translation, Cognitive Approach*) Deductive learning.
Procedural knowledge	*Empiricism (implicit)*	Methods with a focus on practice and learning through repetition (e.g. *Direct Method, Audio-Lingual Method*). Inductive learning.
Declarative + Procedural knowledge	*Rationalism & empiricism (Explicit & implicit)*	Integrative methods, methods with a focus on form and content (e.g. some *communicative approaches*). Inductive + deductive learning.

Table 1. *Categories of knowledge, theories of knowledge acquisition and teaching methods.*

5. Sequences of phases in knowledge acquisition and learning sequencing of activities in teaching materials

Two principles underlie Anderson's (1982, 1983) model: (i) *DEC* precedes *PRO* in knowledge acquisition (but, what happens in the acquisition of the native language?); (ii) full knowledge is reached when *DEC* is proceduralized. The first principle allows us to state that the steps in knowledge acquisition adjust to the pattern *DEC–>PRO* (still, the acquisition of the mother tongue seems not to include the *DEC* stage, at least not in a conscious way). The second principle counts for the necessary 'transit' of *DEC* into *PRO* in order to reach a full stage in knowledge acquisition.

The tendency of most teaching methods, consciously or not, has been to focus on the acquisition of one or the other type of knowledge, *DEC* or *PRO*, that is, they tend to emphasize either deductive and rule-based, or inductive and pattern-based learning. We must keep in mind though that learning languages is an extension of knowledge acquisition and presumably it must also submit to the general cognitive pathway.

According to Anderson's model, the general cognitive pathway is *DEC–>PRO*. The acquisition of an L1 however, does not seem to adjust to this scheme; experience tells us that the cognitive capacity of children does not reach the level of awareness necessary to meet the *DEC* condition (conscious processing of the structure of language). Instead, the *PRO* stage alone seems to be at work for a long time, and the scheme *PRO–>DEC* (*PRO* complemented by *DEC*) may be detected rather late, perhaps around the age of twelve. Some scholars have proposed (see Johnson 1996) that the *DEC* stage by children is there but acting at a subconscious level (universal grammar principles). The learning pathway of L2 learners may adjust to the general pattern. Adults are already mature in their cognitive capacity and take advantage of it from the very beginning of their process of learning. At the same time, and together with their cognitive potential, they abound in practical exercises and communicative activities of all sorts as a help in the consolidation of knowledge. Put in a more simple way, adults combine *DEC* and *PRO*, and tend to begin with *DEC* just to turn afterwards to *PRO* to consolidate in their memories the linguistic data already processed. Furthermore, the *DEC–>PRO* sequence may shift into *PRO–>DEC*, and so on. In conclusion, L1 and L2 learning pathways are not exactly the same: while L1 learners begin with *PRO* and stay with it for a long time, L2 learners prime the *DEC–>PRO* sequence, though *PRO<–>DEC* (*PRO* reinforced by *DEC*, or *PRO* followed by *DEC*) may also take place.

Methods for *language teaching* claim a rather rigid and repetitive sequencing in the organization of the materials. Deductive methods typically begin with activities of a cognitive nature (e.g. explain and memorize grammar rules, as in the Grammar-Translation Method), while the rest of activities turn around those goals and some may include practice with relevant linguistic samples or linguistic consciousness-raising exercises. The sequencing of the activities implied in deductive methods adjusts to the model of knowledge acquisition *DEC–>(PRO)*, or *DEC–>(PRO)–>DEC*, in parallel to its correlate and more classical P-P-P (Presentation (P1)–Practice (P2)–Production (P3))

model (see Criado 2008a, 2008b; Sánchez 2001 for more details). P3, however, is often absent, while P1 is notoriously emphasized. Table 2 illustrates the model (the type of the cognitive and the P-phase is assigned depending on the nature of each one of the activities and the involvement of *DEC* or *PRO*). The reader is addressed to Appendix 1, where this unit is included.

Lesson: Order of activities	**Type of activities: Instructions**	**P-phase (according to the P-P-P model)**	**Cognitive phase (DEC / PRO)**
1	(Statement of a grammar rule: passive voice)	P1	*dec* (grammar)
2	(Vocabulary bilingual list in English and Spanish: passive voice examples and human positive and negative values)	P1	*dec* (grammar) *DEC* (vocabulary)
3	*Exercises* (sentences for inverse oral translation)	P2	*pro* (vocabulary) *DEC–>pro* (grammar rule)

Table 2. *Grammar Translation textbook:* Velázquez, M. and T. Simonné. 1895. *Ollendorff's New Method of Learning to Read, Write, and Speak the Spanish Language*. (Lesson 43rd).

Activity no. 1 only entails the right understanding of the grammar rule (*dec*); however, *DEC* needs to be developed and refined by means of specific focus on form activities such as translation, rewriting, etc., as is argued by DeKeyser (1998: 55). It could be considered that activity no. 3 fulfils this purpose and thus accounts for *DEC*. Proceduralization starts developing too even if in a very rudimentary or primitive way, which involves *DEC–>pro* and not *DEC* alone.

The bilingual list in activity no. 2 includes phrases and short sentences with vocabulary from a specific semantic field (human positive and negative qualities). The inclusion of this specific vocabulary and passive sentences helps towards the purpose of this activity: illustration of the previous rule of the passive voice. Accordingly, exercise no. 2 focuses on the acquisition of the declarative knowledge underlying the vocabulary and the structural patterns of the passive; hence *dec* in activity no. 2 for grammar and *DEC* for vocabulary. Contrary to grammar, declarative knowledge of vocabulary seems to be directly acquired without any intermediate phases. In both grammar and vocabulary, there is not a full *PRO* phase as no activities focused on free and contextualised production (P3) are offered to the students.

Inductive methods typically begin (i) with a pedagogically modelled text conditioned by the linguistic elements needed and representative of a habitual communicative situation (e.g. the Audio-Lingual Method), or (ii) with activities of a varied nature, mainly oral and interactive, in which teacher and students engage in a somehow artificial communicative process (e.g. the Direct Method, the Community

Language Learning Method). Notional-functional methods, as the lesson in Table 3 shows, do not deviate much from the Traditional method (best represented by the Grammar-Translation Method) in terms of the organization of the stages of knowledge acquisition: the *dec/DEC* stage is overrepresented, while the *PRO* stage is poorly activated, is incomplete or clearly subordinated to the *DEC* phase. See Appendix 2 for the whole text of the unit.

Lesson: Order of activities	**Type of activities: Instructions**	**P-phase (according to the P-P-P model)**	**Cognitive phase (DEC / PRO)**
1	Dialogue (listening and reading activity, with new linguistic materials for the unit)[2]	P1 (vocabulary and grammar)	Grammar and vocabulary: *dec*
2	*Go shopping. You have 3 pounds. What can you buy? (Copia en tu cuaderno)*	P2 (vocabulary)	Vocabulary: *DEC*
3	*What's there in the fridge*? *(Copia en tu cuaderno. Mark with X)*	P2 (vocabulary)	Vocabulary: *DEC*
4	*What's the answer? (Copia en tu cuaderno)*	P2 (grammar and vocabulary)	*DEC–>pro*
5	*Where is/are….? (Copia en tu cuaderno)*	P2 (grammar and vocabulary)	*DEC–>pro*

Table 3. *Notional-functional textbook*: Fente, R., N. McLaren and E. Wulf. 1983. Viking 1. Madrid: SGEL S.A. (Unit 8).

The lexical focus of this lesson is food items, whilst the structural objective is expression of the presence or absence of items with the expletive "there is/there are" in affirmative and negative statements and in questions. Activity no. 1 involves an implicit presentation (P1) of grammar and vocabulary in the written and aural text (*dec*). It is implicit as the attention is not explicitly focused on forms through input enhancement of highlighted forms, for instance; the students are simply asked to read the text, which means that they may or not be aware of the focal linguistic point. Therefore, this does not allow for complete declarativization, which is expressed as *dec* in small letters. Besides, this exercise also fosters the practice (P2) of the reading skill. Declarative knowledge of vocabulary is attained, implicitly, through a very restricted P2 in activities no. 2 and no. 3. As for the targeted grammar rule, *DEC* is also implicitly acquired through the controlled structural manipulation (P2) in activities no. 4 and no. 5, where students have to supply the answer to several questions with expletive "there is/there are" (no. 4) and write the question to given responses with the same structure as in no.

4 in activity no. 5. Similar to Table 2, *PRO* is not fully reached due to the absence of a real productive phase. Exercises no. 4 and 5 in this unit account for just *pro* and provide an initial and primitive form of proceduralization. This is due to the absence of exercises which adequately combine an emphasis on both form and meaning (DeKeyser 1998).

Regarding knowledge acquisition (Anderson, 1983; 2005; Criado, 2005, 2008a, 2008b), the genuine and complete *DEC–>PRO* pattern, as representative of the general cognitive pathway, is not the underlying scheme of most traditional, structural and inductive methods (Tables 2 and 3 above), but appears more faithfully in some communicative textbooks (Table 4). Appendix 3 contains the full text of this lesson, which belongs to a classical coursebook from the Communicative Language Teaching Approach.

Lesson: Order of activities	**Type of activities: Instructions**	**P-phase (according to the P-P-P model)**	**Cognitive phase (DEC / PRO)**
A. 1	*Read the text with the help from your teacher.*	P1 (lexico-grammatical structures)	Lexico-grammatical structures: *dec*
A. 2	*Pronounce these words.*	P2 (pronunciation)	Pronunciation: *PRO*
A. 3	*Practise reading the text aloud. Then close your book and remember what you can.*	P2 (pronunciation)	Pronunciation: *PRO*
A. 4	*Make more sentences about places on the map.* (Examples given)	P2 (lexico-grammatical structures)	Lexico-grammatical structures: *DEC–>pro*
A. 5	*Talk about places in other countries.* (Examples given)	P3 (lexico-grammatical structures)	*PRO* (lexico-grammatical structures at an oral level)
A. 6	*Write about places in your country.* (Example given)	P3 (lexico-grammatical structures)	*PRO* (lexico-grammatical structures at a written level)

Table 4. *Communicative textbook*: Swan, M. and C. Walter. 1984. *Cambridge English 1*. Cambridge: Cambridge. University Press. (Unit 4A).

The linguistic learning focus of the unit is lexico-structural patterns involving prepositions of place. Similar to Tables 2 and 3, activity no. 1 entails an implicit presentation of grammar in the reading text (*dec*). Activities no. 2 and 3 focus on pronunciation, for which mechanical repetition can be regarded as sufficient proceduralization (DeKeyser 1998: 53). This is probably rooted in the highly discrete nature of the phonological items. It could be argued that activity no. 3 represents an

additional implicit and inductive type of presentation (P1) for the lexico-grammatical objectives of the unit. This P1 introduces the practical exercise in activity no. 4, where the linguistic structures may be explicitly considered through controlled practice (P2). This practice results in the acquisition of *DEC* and in the start of its proceduralization (*DEC–>pro*), which is completed in activities no. 5 and 6 in both oral and written modes (*PRO*). Evidently, at this point we have to be flexible and bear in mind that the free production activities in textbooks for beginners will be more constrained than those for a more advanced level, such as upper-intermediate or advanced. Also, the readers' attention should be drawn to the fact that the cognitive processes distinguished in the three analysed units are not completed as isolated chunks. Learners need much more practice and revisiting of all the language studied to ensure that their production does not rely on short-term memory but that it is firmly rooted on automatization. It is obvious that this process is difficult to fully attain in just one lesson.

Finally, the analysis from the Communicative Approach unit has revealed not only a *DEC–>PRO* cognitive sequence, but also the pattern P1-P2-P3 from a pedagogic point of view. This is a very surprising finding, since the Communicative Approach was precisely born as a reaction to the standardised model of activity sequencing in the Structural Methods, e.g. the British Situational Language Teaching Method, whose lessons presented a clear P1-P2-P3 pattern.

6. Conclusions

We agree with Johnson (1996) and Felix (1986) in accepting a specific pathway to L1 acquisition, which differs from L2 learning. But both admit a role for general cognitive learning: a predominantly unconscious and inductive one for L1 acquisition (*PRO* model, with the presence of *DEC* at an unconscious level), and a *declarative*/deductive one accompanied by a *procedural*/inductive one for L2 learning (*DEC–>PRO* model).

Thus L2 language learning may comply with general *cognitive knowledge acquisition patterns* in two aspects: (i) in the presence of *DEC* and/or *PRO* and (ii) in the prevailing -but not necessarily exclusive- sequence *DEC–>PRO*, which would not totally ban *PRO–>DEC* in some cases. A model complying with a general cognitive theory should therefore allow for some flexibility in the sequence of the category of knowledge implied; *DEC* and *PRO* should not be absent in the process either. A flexible model will allow for sequences of varied kind and length, as the following:

DEC–>PRO
dec–>PRO
DEC–>pro–>DEC
pro–>DEC–>PRO
DEC–>pro–>PRO
DEC–>PRO–>DEC–>dec, etc.

Such a model asks for significant and sometimes radical changes in the theoretical principles behind the methods. The need for such a change comes clearly into focus when real *teaching materials* are analysed: they do not always comply with the theoretical tenets of the methods they apparently serve. The analysis of teaching materials and classroom practices reveals that general *cognitive patterns* are often taken into account -although not explicitly acknowledged- allowing for clear contradictions between what methods claim and what practitioners do. Dogmatisms and rigid patterns should thus be abandoned. The emphasis on *PRO* and the strong opposition to *DEC* in the Audio-Lingual or the Direct Method[3]; the large focus on *DEC* in the Grammar-Translation Method, or the bias towards *PRO* in the Communicative Approach (especially in the Task-Based Language Teaching Approach, or in Process-based Approaches), do not comply with the prevalent *DEC–>PRO,* or *DEC–>PRO–>DEC* cognitive sequence of language learning by adults. In *foreign language acquisition*, *DEC* and *PRO* keep and play their role, that is, consciousness on the structure of the linguistic system and the application of its rules to the linguistic 'data base' we keep in memory go together with the consolidation of linguistic elements or 'chunks' through repetition and practice, until no further conscious processing or analysis is needed (i.e. when knowledge has been fully proceduralized). Mechanical repetition alone without any form-meaning connections may be inefficient (DeKeyser 1998: 53) because the absence of such a link may hinder proceduralization.

As a consequence, teachers and textbook writers for L2 learners should look for *patterns of lesson organization* which allow for acquisition pathways compliant with the general cognitive model, that is: (i) promoting the acquisition of *DEC* and *PRO* with the suitable kind of activities, (ii) priming the sequence *DEC–>PRO*, but allowing for other options that are rooted in real communicative processes, such as the model outlined by Sánchez (2001, 2004; see Criado 2008a). In order to reach that goal, a more thorough research on the relationship between *DEC*, *PRO* and the nature of the activities connected to each one of them would be welcome.

NOTES

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1. The latest version of this model, which greatly resembles the previous one, is ACT-R, where R stands for "rational".
2. In this kind of textbooks the initial dialogue is usually presented to the students as a listening exercise first and as a text for reading aloud in a second phase.
3. Both the Direct Method and the Audio-Lingual Method emphasize the role of practice (hence *pro* or *PRO*) in the learning of languages. Real materials, however, do not fully comply with this principle. The initial dialogue/text in the Audio-Lingual Method clearly attempts to introduce new and pedagogically conditioned materials, although usually avoiding explicit explanations of the grammar implied (hence *dec*, not *DEC*). The practice stage itself is also peculiar: the Audio-Lingual Method typically advocates practice

with decontextualized patterns, that is, with language in which meaning and form are not adequately matched (hence *pro*, and not *PRO*). The Direct Method, in its turn, also introduces new materials without explicit explanations (hence *dec*), while practical work is often pedagogically constrained or not adequately contextualized (hence *pro* and not *PRO*).

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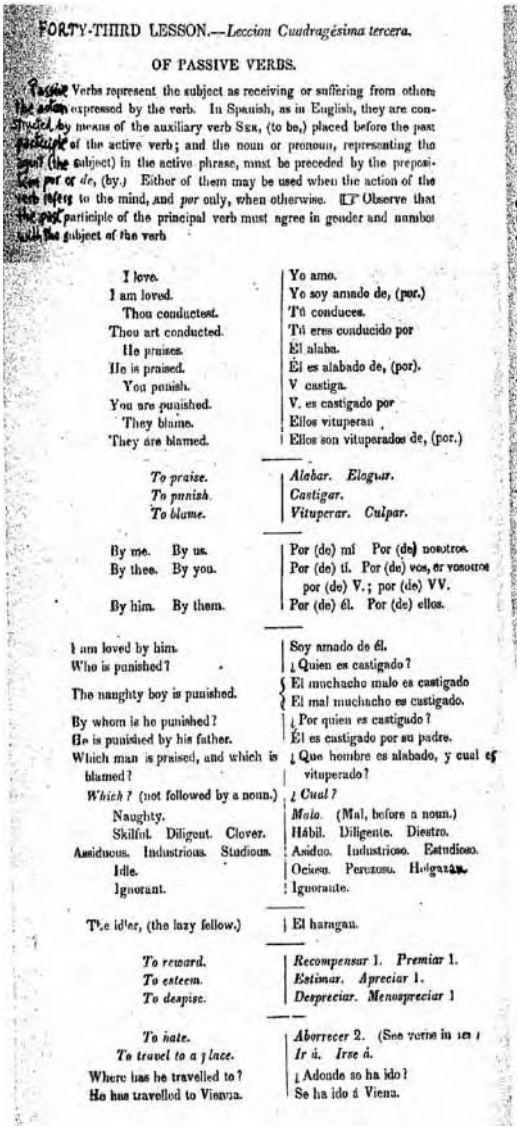
APPENDICES: UNITS ANALYZED

Appendix 1

Velázquez, M. and T. Simonée. 1895. *Ollendorff's New Method of Learning to Read, Write, and Speak the Spanish Language.* New York: D. Appleton and Company. (Lesson 43rd).

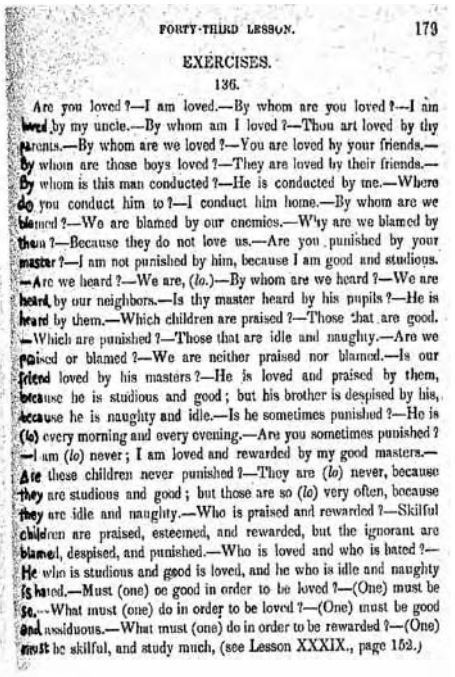


FORTY-THIRD LESSON.—*Leccion Cuadragésima tercera.*

OF PASSIVE VERBS.

Passive Verbs represent the subject as receiving or suffering from others the action expressed by the verb. In Spanish, as in English, they are constructed by means of the auxiliary verb SER, (to be,) placed before the past participle of the active verb; and the noun or pronoun, representing the agent (the subject) in the active phrase, must be preceded by the preposition *por* or *de*, (by.) Either of them may be used when the action of the verb refers to the mind, and *por* only, when otherwise. ☞ Observe that the past participle of the principal verb must agree in gender and number with the subject of the verb

I love.	Yo amo.
I am loved.	Yo soy amado de, (por.)
Thou conductest.	Tú conduces.
Thou art conducted.	Tú eres conducido por
He praises.	Él alaba.
He is praised.	Él es alabado de, (por).
You punish.	V castiga.
You are punished.	V. es castigado por
They blame.	Ellos vituperan
They are blamed.	Ellos son vituperados de, (por.)
To praise.	*Alabar. Elogiar.*
To punish.	*Castigar.*
To blame.	*Vituperar. Culpar.*
By me. By us.	Por (de) mí Por (de) nosotros.
By thee. By you.	Por (de) tí. Por (de) vos, ór vosotros por (de) V.; por (de) VV.
By him. By them.	Por (de) él. Por (de) ellos.
I am loved by him.	Soy amado de él.
Who is punished?	¿Quien es castigado?
The naughty boy is punished.	El muchacho malo es castigado / El mal muchacho es castigado.
By whom is he punished?	¿Por quien es castigado?
He is punished by his father.	Él es castigado por su padre.
Which man is praised, and which is blamed?	¿Que hombre es alabado, y cual es vituperado?
Which? (not followed by a noun.)	*¿Cual?*
Naughty.	*Malo.* (Mal, before a noun.)
Skilful. Diligent. Clever.	Hábil. Diligente. Diestro.
Assiduous. Industrious. Studious.	Asiduo. Industrioso. Estudioso.
Idle.	Ocioso. Perezoso. Holgazan.
Ignorant.	Ignorante.
The idler, (the lazy fellow.)	El haragan.
To reward.	*Recompensar* 1. *Premiar* 1.
To esteem.	*Estimar. Apreciar* 1.
To despise.	*Despreciar. Menospreciar* 1
To hate.	*Aborrecer* 2. (See verbs in *er.*)
To travel to a place.	*Ir á. Irse á.*
Where has he travelled to?	¿Adonde se ha ido?
He has travelled to Vienna.	Se ha ido á Viena.



FORTY-THIRD LESSON. 179

EXERCISES.

136.

Are you loved?—I am loved.—By whom are you loved?—I am loved by my uncle.—By whom am I loved?—Thou art loved by thy parents.—By whom are we loved?—You are loved by your friends.—By whom are those boys loved?—They are loved by their friends.—By whom is this man conducted?—He is conducted by me.—Where do you conduct him to?—I conduct him home.—By whom are we blamed?—We are blamed by our enemies.—Why are we blamed by them?—Because they do not love us.—Are you punished by your master?—I am not punished by him, because I am good and studious.—Are we heard?—We are, (*lo.*)—By whom are we heard?—We are heard by our neighbors.—Is thy master heard by his pupils?—He is heard by them.—Which children are praised?—Those that are good.—Which are punished?—Those that are idle and naughty.—Are we praised or blamed?—We are neither praised nor blamed.—Is our friend loved by his masters?—He is loved and praised by them, because he is studious and good; but his brother is despised by his, because he is naughty and idle.—Is he sometimes punished?—He is (*lo*) every morning and every evening.—Are you sometimes punished?—I am (*lo*) never; I am loved and rewarded by my good masters.—Are these children never punished?—They are (*lo*) never, because they are studious and good; but those are so (*lo*) very often, because they are idle and naughty.—Who is praised and rewarded?—Skilful children are praised, esteemed, and rewarded, but the ignorant are blamed, despised, and punished.—Who is loved and who is hated?—He who is studious and good is loved, and he who is idle and naughty is hated.—Must (one) be good in order to be loved?—(One) must be so.—What must (one) do in order to be loved?—(One) must be good and assiduous.—What must (one) do in order to be rewarded?—(One) must be skilful, and study much, (see Lesson XXXIX., page 152.)

Appendix 2

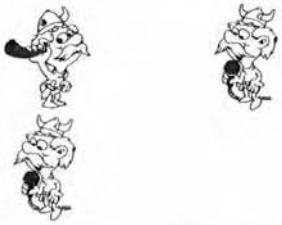
Fente, R., N. McLaren and E. Wulf. 1983. *Viking 1*. Madrid: SGEL S.A. (Unit 8).

A *Using the Language*

SHOPPING LIST

Mother: Biscuits..., butter..., bread..., Johnny!
Johnny: Yes, Mum, what is it?
Mother: Have a look in the fridge, please.
Johnny: Yes.

Mother: Well, have we got any milk?
Johnny: Yes, two bottles.
Mother: And are there any eggs?
Johnny: There's one, but it's broken.



	Price	Quantity
tea	70 p	packet
coffee	£ 1.30	pound
biscuits	80 p	packet
butter	£ 1.20	pound
bread	50 p	—
milk	40 p	—
eggs	60 p	dozen
chocolate	20 p	—

GO SHOPPING
(Copia en tu cuaderno)

Look at this list. You have three pounds. What can you buy? .....
Total .....

tea	70 p
△	△
△	△
△	△
△	△

78 **seventy-eight**

What's there in the fridge? (Copia en tu cuaderno)

(mark with X):

biscuits	milk	eggs	butter	bread
△	△	△	△	△

What's the answer? (Copia en tu cuaderno)

1. Is there any milk in the fridge? — Yes, △
2. Are there any eggs on the table? — No, △
3. Are there any biscuits on the table? — Yes, △
4. Is there any butter in the fridge? — No, △
5. Are there any bottles on the table? — No, △
6. Is there any bread on the table? — Yes, △

Where's the butter? — on the table

Where are the bottles? — in the fridge

What's the question? (Copia en tu cuaderno)

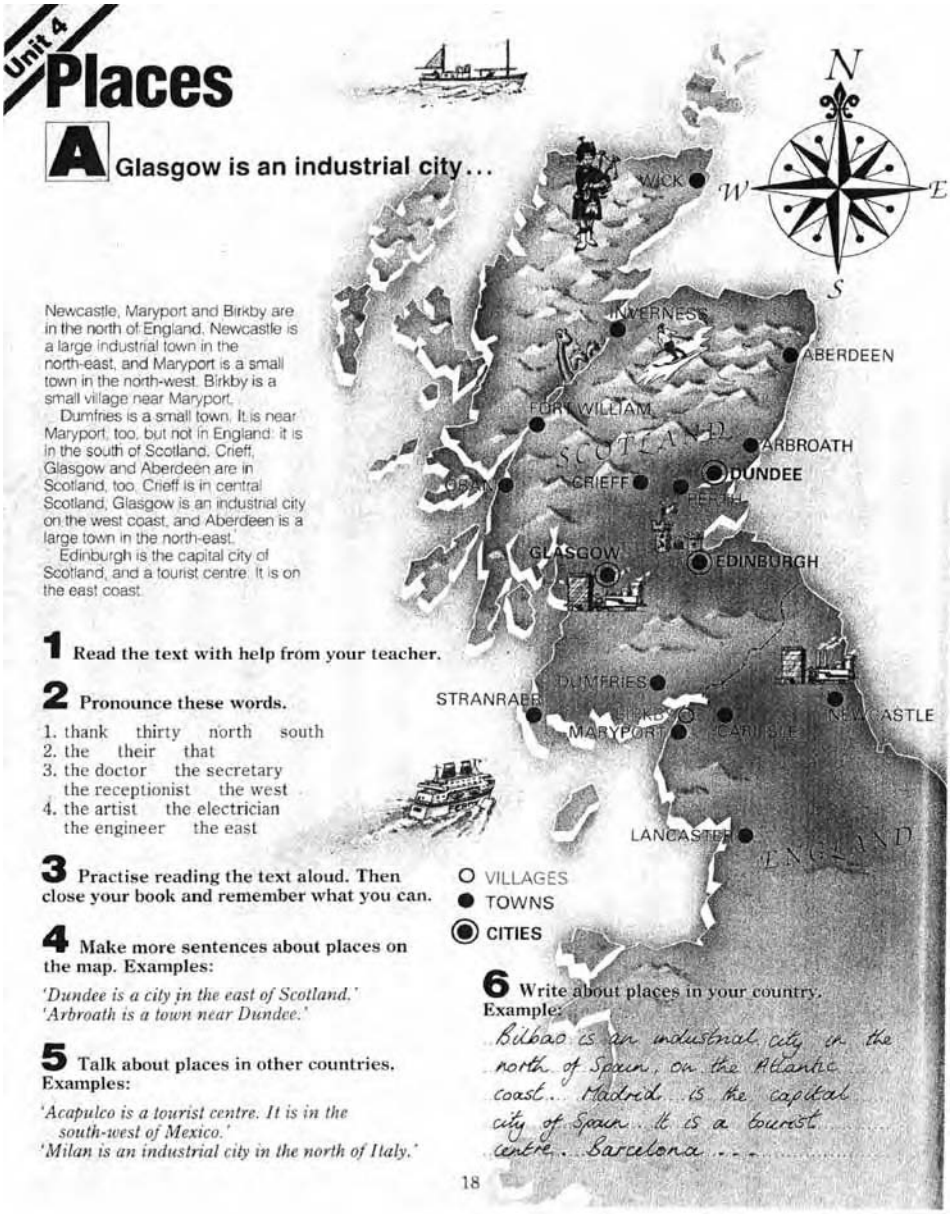
1. △ ?—
2. △ ?—
3. △ ?—
4. △ ?—
5. △ ?—

milk	— It's in the fridge
biscuits	— They're on the table
egg	— It's in the fridge
bread	— It's on the table
bottles	— They're in the fridge

seventy-nine 79

Appendix 3

Swan, M. and C. Walter. 1984. *Cambridge English 1*. Cambridge: Cambridge University Press. (Unit 4A).



Unit 4

Places

A Glasgow is an industrial city...

Newcastle, Maryport and Birkby are in the north of England. Newcastle is a large industrial town in the north-east, and Maryport is a small town in the north-west. Birkby is a small village near Maryport.

Dumfries is a small town. It is near Maryport, too, but not in England: it is in the south of Scotland. Crieff, Glasgow and Aberdeen are in Scotland, too. Crieff is in central Scotland, Glasgow is an industrial city on the west coast, and Aberdeen is a large town in the north-east.

Edinburgh is the capital city of Scotland, and a tourist centre. It is on the east coast.

1 Read the text with help from your teacher.

2 Pronounce these words.

1. thank thirty north south
2. the their that
3. the doctor the secretary
   the receptionist the west
4. the artist the electrician
   the engineer the east

3 Practise reading the text aloud. Then close your book and remember what you can.

4 Make more sentences about places on the map. Examples:

'Dundee is a city in the east of Scotland.'
'Arbroath is a town near Dundee.'

5 Talk about places in other countries. Examples:

'Acapulco is a tourist centre. It is in the south-west of Mexico.'
'Milan is an industrial city in the north of Italy.'

O VILLAGES
● TOWNS
◉ CITIES

6 Write about places in your country. Example:

Bilbao is an industrial city in the north of Spain, on the Atlantic coast. Madrid is the capital city of Spain. It is a tourist centre. Barcelona ...

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