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that UG, and especially the parameters part of Principles and Parameters (P&P) theory, explains the developmental problem of SLA. Why not?

There has never been any serious attempt by SLA P&P researchers to connect the construct of parameter-setting to a theory of (a) speech perception, (b) language parsing, (c) cognitive functional architecture, (d) learning relevant for parameter-(re)setting, (e) language production, or (f) how UG relates to the metalinguistic classification tasks which comprise so much of the evidence on its behalf. The criticism of vagueness directed at inductivist approaches applies to Epstein et al. as well. Not only does P&P not tell us what the contents of the learner's psychogrammar are (only a case study could do that), it is difficult to pinpoint what the contents of the P&P theory are. When it comes to parameters, it is definitely "here today, gone tomorrow." We need only ask our developmental questions to see the vacuousness of claims of explanatory adequacy regarding the Developmental Problem. There is no theory of triggers for SLA, no account of why setting a parameter in one system does not create unlearning in the others, of why there is no "pendulum effect" (Randall 1990), or how learners interpret ambiguous data (Valian 1990). All of the major questions about how the psychogrammar develops over time remain unanswered, which leads me to ask: Just what do SLA P&P theorists think they are explaining?

Who will provide answers? Learnability theory? It is unlikely.

Problem 1. Parameter-setting cannot even guarantee learnability of relevant classes of grammars (Gibson & Wexler 1994).

Problem 2. Maturation is increasingly being used to explain acquisition. Gibson & Wexler (1994) assume that access to parameters is limited by maturation. This has the effect of ordering the data the learner has access to. Bertolo (1995) generalizes this analysis and offers maturation as a principled account of the gradual nature of language acquisition. This should bring joy to the hearts of all P&P SLA researchers, since we can now explain the absence of sudden, wholesale restructurings in SLA development, originally predicted as the "deductive" consequences of parameter-(re)setting (Meisel 1991), by the assumption that adult bilinguals are all suffering from a language-specific, autonomous, modular, senilitas praecox.

Problem 3. How do learners recognise triggers? P&P theory hinges on the availability of triggers, which must be located in the stimuli. However, learnability theory does not explain how the learning mechanism connects to the perceptual and processing systems. Psycholinguistic research has provided solid evidence that bilinguals use the same parsing strategies for L2 stimuli that they use for their L1 (see Kilborn & Ito, 1989, and references therein). Learners are transferring highly overlearned L1-specific processing strategies. Transferred parsing strategies can cause the learner to overlook particular stimuli in the environment (see VanPatten, 1984, for examples). Parsing failure does not necessarily lead to a failure to interpret the stimulus since adults have a number of compensatory mechanisms which permit them to project an interpretation. The standard learnability supposition that learning is error-driven and that parameter-setting is initiated whenever parsing fails (Berwick 1985) is too strong. How, then, can we guarantee that learners in fact notice the relevant stimuli and represent the relevant triggers? Nothing in the SLA P&P literature even acknowledges this issue.¹ I conclude that at the moment P&P theory has nothing to say about the developmental problem of SLA.

Does P&P theory make the right claims regarding the Representational Problem of SLA? Perhaps not. There is good evidence that the representational systems available to the child are not those available to the adult. Work on speech perception in babies suggests that they are either born with or rapidly develop the capacity to discriminate the full range of phonetic features needed to acquire the phonetic and phonological categories of the L1 (Jusczyk 1992).

Various studies (see Werker & Pegg 1992) have provided important evidence for a process of perceptual reorganisation

during the first year of life which makes certain phonetic features unavailable to older children and to adults. There is an absolute loss in the ability to detect certain features, a process sometimes referred to as canalisation. This is proof enough that the representational systems used in L1 acquisition are not the *same* as those deployed in L2 acquisition. Werker and her colleagues have nonetheless shown that for most non-L1 features the capacity to detect them remains into adulthood, but the ability to learn and use them is determined largely by the abstracted categories of the L1 phonetic system. L1-irrelevant features are treated by the parsing system as noise and have no effect on the activation of higher-order categories (phones and phonemes).

Flege, in a large body of work (see, e.g., Flege 1987), has shown how adults can nonetheless learn some of the phonetic categories of the L2 via a process of recategorisation. The contrast could not be clearer: in L1 acquisition an *a priori* representational system becomes available and particular features are activated by specific stimuli, retained, and then become the basis for the creation of the phonetic and phonological categories. Features which are not activated "disappear" either in an absolute way (they can no longer be detected at all) or in a relative way (they are ignored by the L1 parsers). In L2 acquisition, the parsing strategies of the L1 are transferred and play a critical role in determining what input becomes available to the learning mechanism. The categories drawn from existing representational systems which can be imposed by the parsers on the stimuli are imposed. Sometimes phonetic detail can be lost to the system. In other cases, the properties of the categories are readjusted so that there are subtle changes in the "best exemplar" or "central tendency." Finally, new categories can be gradually formed where the stimuli cannot be reduced to the known categories. All of this smacks of induction, which manifests itself across a large number of cognitive domains, including language. Induction therefore plays a role in the explanation of the developmental problem.

In my view, the debates about the "accessibility" of UG have given off more heat than light. It is not false to suggest that adult learners "access" UG since they encode linguistic stimuli in language-specific autonomous representational systems which can ultimately be traced back to UG. It is only false to assert that "learning" in SLA can be reduced to parameter-setting and that induction does not apply to linguistic cognition.

NOTE

1. Parsing considerations are relevant to the argumentation in other respects since the case dismissing the partial access hypothesis hinges largely in showing "access" to subadjacency by Chinese & Indonesian learners of English, something which can be explained in terms of the architecture of the parser (Berwick & Weinberg 1984), or in terms of specific parsing constraints (Hawkins's argument trespassing generalization, Hawkins, 1996) rather than UG.

How adult second language learning differs from child first language development

Harald Clahsen^a and Pieter Muysken^b

^aDepartment of Language & Linguistics, University of Essex, Colchester CO4 3SQ, United Kingdom; ^bDepartment of Linguistics, Universiteit van Amsterdam, 1012 VT Amsterdam, The Netherlands. harald@essex.ac.uk; muysken@let.uva.nl

Abstract: We argue that the model developed in Epstein et al.'s target article does not explain differences between child first language (L1) acquisition and adult second language (L2) acquisition. We therefore sketch an alternative view, originally developed in Clahsen and Muysken (1989), in the light of new empirical findings and theoretical developments.

Epstein et al.'s target article makes use of the so-called full competence hypothesis (FCH), that was originally developed for child L1 development, and applies it to adult L2 learning. Under

the FCH (cf. Poeppel & Wexler 1993), the child embarks on grammatical development with a complete system of syntactic categories and representations, including general principles and parametric options of Universal Grammar (UG). Epstein et al. argue that this is also the case when adults learn an L2. The underlying paradigm of the research reported in the target article is: UG development is interesting, non-UG development is not interesting, so for L2 development to be interesting as a research topic we have to make it as UG as possible. In our view, this is not a very fruitful line of thinking: it is precisely the division of labour between UG- and non-UG learning that is crucial to our understanding of the modular structure of language development. It is implausible that all of L1 development is UG-driven, since it is embedded in a highly intricate process of general cognitive development, involving all kinds of learning. Knowledge of language interacts in yet ill-understood ways with other knowledge-systems, many of which have highly abstract computational properties. A non-UG rule such as the one given as a caricature in section 2.4 of the target article about plurals with -s for all objects of less than 40 tons is no more typical of language than it would be of other cognitive systems. Incidentally, Epstein et al. would be surprised if they looked at the semantics of (L1 to be sure) Niger-Congo or Sino-Tibetan noun classification systems. Similarly, adult L2 development is plausibly not fully UG-driven. Adults can learn many things, like ritual dances, computer languages, literary forms, and complex kinship systems, which are presumably not fully defined by UG but still share with natural languages a number of computational features such as structure-dependency. If much of L2 learning is not UG-driven, the comparative investigation of L1 and L2 acquisition provides a window for the systematic study of the properties of different knowledge systems. How much of a language can you and do you learn without UG? Do we use UG for other symbolic systems besides language? Below we will claim that the triggering properties of morpho-syntactic categories may belong to UG, and indeed differentiate L1 from L2, but constituency and structure-dependency, which occur in L2, but also in computer languages and ritual dances, may not.

In the target article, differences between L1 and adult L2 acquisition are claimed to be peripheral, attributable to L2 learners' ostensible performance difficulties in expressing functional categories in their utterances. Unfortunately, however, these difficulties are not made explicit, and Epstein et al. appeal to future "rigorous experimentation" to determine their precise role for acquisition. This is a very unsatisfactory answer that leaves us with little understanding of the nature of L2 acquisition. We do not see how performance difficulties could lead to children consistently arriving at smarter analyses than adults. In the L1 developmental literature, nongrammatical factors such as processing limitations on sentence length, incomplete phonological acquisition, and so on, have been invoked to explain why children do not do as well as the syntactic analyst would predict. It is not clear why adults would be more hindered by performance factors than are children. All we know about performance points the other way. Another explanation for L1/L2 differences to which Epstein et al. allude in passing is that L1 settings may get in the way, at least initially, of L2 learners setting the parameters of the language to be acquired. At several points, however, this explanation in terms of transfer effects is undercut by the authors themselves, when they stress the importance of universal, as opposed to L1, features in learning a second language. In our earlier work we argue that L2 learners with different L1 backgrounds (= L1 parameter settings) often have the same difficulties with second language structures, even if their L1 would favor their being acquired easily. Thus Turkish learners, with a Subject-Object-Verb (SOV) L1 background, still tend to analyze German in L2 acquisition as a Subject-Verb-Object (SVO) system, ignoring the same cues that it is SOV underlyingly to which L1 learners catch on automatically. Such differences between child L1 and adult L2 acquisition cannot be interpreted as transfer effects.

In trying to explain the differences between L1 and L2 develop-

ment let us adopt a restrictive theory of language learning in which "learning" involves the loss of information specified in UG (Lebeaux 1988). A UG parameter, according to this model of acquisition, provides the language learner with a set of options that have to be filled in by experience. Under this restrictive theory, we would expect that once a parametric option (consistent with the available input) has been chosen, the remaining unexercised options are no longer accessible. This constraint implies that the steady final state, that is, the grammar of a particular language, contains less information on parametric options than the initial state. One desirable consequence of this is that it obviates a learnability problem of L1 acquisition: parameter re-setting is made impossible, and thus the child may not switch parameter values back and forth never settling on the correct grammar (Randall 1992; Valian 1989). Another consequence is that adult L2 learners (as a result of their L1 acquisition) have lost parametric options which are not instantiated in their native language (Clahsen & Muysken 1989). Thus, under this view, the contrast between L1 and adult L2 development is real and fundamental: parametric options specified in UG are accessible to L1 but not to adult L2 learners. Some empirical findings from comparative L1/L2 acquisition studies indicate that this view might be correct, in contrast to the position the target article seeks to argue for. Consider the following relatively well-established facts from the acquisition of German.

Finiteness and verb-second (V2). Verb raising to Comp (= V2) is restricted to finite verbs in German (cf. sect. 3.3.2 of the target article). The same restriction holds for German child language. Despite theoretical differences, there seems to be agreement among L1 acquisition researchers that verb raising is available early on, that only finite verbs undergo V2 and that nonfinite verbs almost always appear in clause-final position (Poeppel & Wexler 1993). This is different in adult L2 learners' German. Here nonfinite verbs (= infinitives) are not restricted to clause-final position, but may appear in the same positions as finite verbs, resulting in a general X-V-Y word order system in which V can be filled with finite and/or nonfinite verbs; cf. (44a) in the target article for illustration. This has been shown to hold for L2 learners with different L1 backgrounds (cf. Clahsen & Muysken 1989; Vainikka & Young-Scholten 1994, pp. 283ff.). Thus morphologically driven syntactic phenomena such as V2 cause major acquisition problems for adult L2 learners, but not for child L1 learners. By contrast, L2 learners have no difficulty manipulating constituents such as NP and PP in production. In this sense, constituency and structure-dependency are clearly part of their L2 competence.

Finiteness and negation. The negative element (Neg) always precedes nonfinite verbs in German, and in main clauses Neg follows finite verbal elements. These properties are indirect consequences of V2. Several studies have shown that the same distribution holds for early child German (cf. Clahsen et al. 1993, p. 416; Verrips & Weissenborn 1992, p. 287). The ungrammatical pattern [Infinitive + Neg] does not exist, and if there is a finite verb in a child's sentence, it precedes Neg. Again, this is not the case in adult L2 acquisition: Neg may precede or follow finite as well as nonfinite verbs yielding all possible orders, even the [Infinitive + Neg] pattern which is always ungrammatical in German; see the appendix to Clahsen (1984) for examples.

Finiteness and null subjects. In nonfinite clauses, that is, infinitives, referential null subjects are allowed in German, whereas in finite clauses they are ungrammatical. In embedded clauses, referential null subjects are also disallowed. The same restrictions hold for German child language. Null subjects are frequent in young children's speech, but they typically occur in sentences with nonfinite verbs (Weissenborn 1992). In embedded clauses with finite verbs and overt Comp, children do not drop subjects (Clahsen et al. 1995). In adult L2 learners of German, however, subject drop does not interact with finiteness distinctions (cf. Meisel 1991). Moreover, results from reaction-time experiments indicate that adult L2 learners of German treat embedded sen-

tences containing null subjects on a par with the grammatical control sentences (Clahsen & Hong 1995). This again differs from both adult and child German.

These findings show that there are close morphology-syntax connections in child L1 development: the distinction between finite and nonfinite verbs is relevant for the placement of verbs and Neg and for the distribution of null subjects. In adult L2 acquisition, however, the syntactic phenomena seem to be independent of the morphological ones. How could these differences be explained?

Let us assume, following Chomsky (1995), that parametric options of UG are restricted to a fixed set of formal features (F) of functional categories which can be "strong" or "weak" and that overt movement is feature-driven: only strong features need to be overtly raised and checked. From the perspective of acquisition, this implies that the child is equipped with a mechanism for determining whether F is strong or weak in any particular language and that the acquisition of movement is dependent upon morphological properties. Thus, once the child has discovered a lexical entry associated with some feature F in his particular language, by relying on the parametric option, he will determine its feature strength. Subsequently the parameter is set for F and the unexercised option is lost. If F is a strong feature (as in the cases discussed above) movement effects follow. In this way, morphology-syntax correlations such as those mentioned above for child German can be accounted for. Suppose a model along these lines holds for child L1 acquisition.¹ We can then account for adult L2 acquisition without invoking any extra mechanisms. As parametric options, that is [\pm strong], are lost as a result of L1 acquisition, feature strength is left undetermined in the L2. In other words, when L2 learners acquire a lexical entry corresponding to some feature of the target language, there is no mechanism or device that forces them to decide whether the feature is strong or weak. This implies that phenomena such as verb movement and the syntax of subjects are not driven by morphological properties in L2 learning, and that the acquisition of these properties is not determined by UG parameters. In sum, then, the major difference between L1 and adult L2 acquisition seems to be that adult learners have lost access to the open parametric options for morphosyntactic features of UG.

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NOTE

1. One consequence of this might be that monolingual and bilingual language acquisition are different; in the latter there is always a first (= dominant) language and a second weaker language. This, however, is a controversial issue: Cutler et al. (1992) and Schlyter (1993) have produced evidence that this is indeed the case, but others, for example Meisel (1994), argue against qualitative differences between bilingual and monolingual acquisition. We will leave this issue open.

UG and acquisition in pidginization and creolization

Michel DeGraff

Linguistics and Philosophy, Massachusetts Institute of Technology, Cambridge, MA 02139-4307. degraff@mit.edu

Abstract: I examine the target article's hypothesis in light of pidginization and creolization (P/C) phenomena. L₁-to-L₂ transfer has been argued to be the "central process" in P/C via relexification. This seems incompatible with the view that UG sans L₁ plays the central role in L2A. I sketch a proposal that reconciles the hypothesis in the target article with, inter alia, the effects of transfer in P/C.

If, as cogently argued by Epstein, Flynn, and Martohardjono, UG uniformly plays the central role in L1A and L2A, then one of

creolists' enduring puzzles might be somewhat off-base – namely, is it children or adults that are the main agents of creolization? (For a sample of the debate, see Andersen 1983a and, more recently, Wekker 1995.)

A number of P/C phenomena seem to stem from fundamental differences between L1A and L2A, for example, the use of L₁ in L2A. For example, Sylvain (1936) and Lefebvre and Lumsden (1989) have, among others, argued with some success that certain properties of Haitian Creole (HA) originated with some of its West-African substrates, Ewe/Fongbe, and were "passed down" via L2A of French by Ewe/Fongbe speakers. According to Lefebvre and Lumsden's (1989) relexification hypothesis, adult Fongbe speakers, in trying to learn French, kept their L₁ syntax and semantics relatively intact while replacing L₁ lexemes with forms phonologically derived from L₂ [See Lumsden (in press) for refinements and Bickerton (1988), Chaudenson (1990), DeGraff (1992; 1993; 1994a; 1994b; 1994c; 1995, in press a), Thomason & Kaufman (1993), etc., for critiques of this hypothesis.] Certain approaches to L2A are similar in spirit to the relexification hypothesis in providing (noncreolizing) L2A instances where L₁ properties appear to shape the structure of the learner's (early) interlanguage; [see various contributions to Gass & Selinker (1992), and to Flynn et al. (in press)]. (Following L2A-research terminology, let us use the term "transfer" to refer to such L₁-to-L₂ influence.)

Is the hypothesis put forward in the target article consistent with the effects of relexification and of transfer? Although adult learners bring in "an already functioning L₁" (Introduction), Epstein et al. explicitly argue for "non-transfer of [L₁'s] language-specific aspects" onto the hypothesized L₂ grammars (sect. 3.2.4; also see sects. 2.1 and 3.2.2; Flynn 1987). Such L₁-onto-L₂ mapping is exactly what Lefebvre and Lumsden's relexification hypothesis would lead us to expect, at least in initial L2A stages. Thus, Epstein et al.'s proposal seems inconsistent with relexification in creole genesis and with transfer in L2A.

Adapting ideas on L2A from Schumann (1982) and Andersen (1983b) and on learnability from Lightfoot (1995) might help resolve this apparent inconsistency, along the following (admittedly *very* tentative) lines. Beyond assuming UG-constrained acquisition, what is also needed, according to Lightfoot (1995), is a learning theory that delineates what triggers are required to set what parameters, and how; cf. Clark and Roberts (1993); Gibson and Wexler (1994). Whether or not such a learning theory applies uniformly across L1A and L2A, what it does naturally require in each case is that the primary linguistic data (PLD) reach a certain threshold *T* before UG-constrained learning can proceed. In turn, the PLD constitute the source of the triggers used for parameter setting; in absence of adequate triggers, attained settings might differ from the target. In language-contact contexts, factors determining whether *T* is reached include: range of uses of – and access to – the target language, length of exposure, sociopsychological context, and so on, while factors determining the robustness of triggers include at least the stability and structural complexity of the PLD (Andersen 1983b; Schumann 1982).

If target PLD in L2A remain (moderately) below threshold *T*, then the adult learner might have no other choice but to resort to relexification-like strategies that make crucial use of L₁ settings, that is, the learner cannot "attempt" to set L₂ parameters in absence of adequate PLD from L₂. It is presumably in such circumstances that pidgins are created that reflect substrate properties (cf. Bickerton 1977; 1984; Schumann 1982).

It can be further surmised that, in the (literally) worst-case scenario for L2A in which the PLD are catastrophically reduced way below *T* (e.g., when the inter-language communicative contexts are utterly restricted), no UG-based learning can take place. In such "panic" situations, the learner would have no recourse to UG(-qua-L₁) as he is not even attempting to learn a language, but only innovates some emergency means toward sporadic communication. It is in these contexts that we find "UG-inconsistent" (perhaps context-based pragmatically oriented) modes of commu-