

ON THE DEMARCATION OF PHASES IN EARLY MORPHOLOGY ACQUISITION IN FOUR LANGUAGES

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1. Introduction

1.1. Aims

This contribution is a comparative longitudinal study of 5 children from four article languages (French, Italian, Greek, German¹), all children are filler-children. Since Dressler and Karpf's (1995) distinction between pre-, proto- and modularized morphology phases is not empirical enough, we tackle the demarcation problem in these four languages with the supergoal of contributing to the delimitation of universal possible routes and to the dependency of acquisition on language-specific morphological system-adequacy.

1.2. Fillers

Fillers represent a strategy common to all these children to approach the acquisition problem. Fillers are means of replacing unanalysable grammatical material of adult speech such as articles, determiners, clitics, auxiliaries and other function words in children who first rely on prosodic and phonological structure to build grammatical hypotheses (cf. Bottari et al. 1993; Peters and Menn 1993; Peters in press; Veneziano and Sinclair in press). Fillers usually occupy prosodic slots and cannot be derived from adult forms through phonological processes. As indicated in the name given by Peters and Menn (1993), "filler syllables" usually do not exceed one syllable and consist most frequently of an unstressed vowel, more rarely of a consonant followed by a vowel (cf. also Bottari et al. 1993; Veneziano and Sinclair in press).

¹ Italian and Greek are pro-drop languages, French and German are not.

Use and domain of fillers extend with grammatical awareness, then they differentiate phono-morphologically, finally they are differentially replaced by grammatical markers, first in competition between fillers and their replacements.

Fillers are precursors of later rules whose outputs may occur in all three phases of pre-, proto- and modularized morphology. They are not constitutive of developmental phases, they do not initiate them, but they nevertheless follow the changes that occur in the grammar. To that extent they are (secondary) indicators of phases. Also, as child-specific means for solving acquisition problems, fillers illustrate clearly the non-linearity of language development: as we will see, there are no continuity fillers-morphemes. Moreover, they contribute to making blind alleys (see Dressler this volume) more visible, which is a development expected from a constructivist viewpoint.

1.3. The data

Our study is based on the tape-recorded data of the following 5 children: Sophie, French-speaking (investigated frame: 1;6–3;8, 55 recording sessions, 25 hours); Matteo, Italian-speaking (1;4–2;6, 23 recording sessions, 19 hours + diary notes); Bernd, German-speaking (1;5–3;11, used here 1;9–3;11, 184 recording sessions, 57 transcribed, 4500 child utterances, 8326 tokens); Lisa, German-speaking (1;0–2;9, 13 recording sessions, all transcribed, 3940 child utterances, 10246 tokens); Christos, Greek-speaking (1;7–3;5, 100 recording sessions, 30 transcribed, 40 hours + diary notes). The children have been recorded mainly in free play or while looking at a picture book.

Among the 5 children, Bernd showed a developmental delay. Until 2;6 his language contained mostly fillers and deictics. However his strategies and the routes he follows are quite similar to those of the other children.^{2, 3}

² For a detailed description of Bernd's and Lisa's data, cf. Vollmann et al. (this volume).

³ Our study is a first attempt within the Pre- and Protomorphology Project to bring together data from different languages in one contribution. There are numerous methodological and practical problems that are raised by such a type of study, and we have not been able to cope with all of them in a satisfying way so far: these problems concern mainly data collection, e.g. only diary notes available for Matteo from 1;9 to 2;0; Lisa's data end with 2;2 before modularized morphology; Bernd is not cooperative nor talkative during many recordings between 2;11 and 3;3; because of these imperfections, two German-learning children have been taken into the study; quantitative analysis of data is not yet possible for all children; there are major individual differences between some of the children brought to light during the course of our comparative study.

1.4. Main properties of the 4 (adult) inflectional morphologies

1.4.1. French

Monosyllabic, unstressed articles and subject pronouns are:

- Def(inite) Art(icles), m *le*, f *la*, Pl(ural) *les*; Indef(inite) *un*, *une*, *des*; in the prod(uctive) noun class the Pl is identical to the Sg (singular);
- stressed Pers(onal) Pro(nouns) 1. *moi*, 2. *toi*, Pl *nous*, *vous*, 3. m *lui*, f *elle*, Pl *eux*, *elles*.⁴

Verbs have only 1 prod microclass: Pres Ind Sg *je/tu/il/elle parle* [*parl*] identical to 3.Pl *ils parlent* 'they speak', 1.Pl *nous parlons* (in colloquial French on *parle* [*parl*] is used instead), 2.Pl *vous parlez*; 2.Sg Imp *parle!* [*parl*], Inf *parler* [*parle*] is identical to PPP *parlé*, Imp *il parlait*, Fut *il parlera* and *il va*, Inf, Past *il a* PPP; unprod classes are e.g. PresIndSg *il part* [*par*] 'he leaves', Pl *ils partent* [*part*], Inf *partir*, PPP *parti*; *il prend* 'he takes', Pl *ils prennent*, Inf *prendre*, PPP *pris*; *il mord* [*mɔr*] 'he bites', Pl *ils mordent* [*mɔrd*], Inf *mordre*, PPP *mordu*.

1.4.2. Italian

Prod noun classes (plus Def Art) are m *il libro* 'book', *lo studio* 'study', *l'asino* 'donkey', Pl *i libri*, *gli studi/asini*; f *la casa* 'house', *l'erba* 'grass', Pl *le case/erbe*; Indef Art *un libro*, *uno studio*, *una casa*, *un'erba*.

Stressed Pers Pro: 1. *io* Pl *noi*, 2. *tu* Pl *voi*, 3. m *lui*, f *lei*, Pl *loro*.

Verbs have 1 fully prod microclass: Pres Ind Sg 1. *parlo* 'I speak', 2. *parli*, 3. *parla*, Pl 1. *parliamo*, 2. *parlate*, 3. *parlano*; Imp *parla!*, Inf *parlare*, Impf *parlavo*, Fut *parlerò*, PPP *parlato*, Past *ho* PPP, Gerund *parlando*; another (slightly) prod microclass is: Sg *finisco* 'I end', *finisci*, *finisce*, Pl *finiamo*, *finite*, *finiscono*; Imp *finisci!*, Inf *finire*, Impf *finivo*, Fut *finirò*, PPP *finito*; unprod classes are e.g. *dormo/-i/e* 'I/you/he sleep(s)', Pl *dorm-iamo/-ite/-ono*, Imp *dormi!*, Inf *dormire*, PPP *-ito*;

⁴ Adult productivity must be distinguished from child productivity. Productivity of an adult inflectional rule or class means that new words (loans or indigenous neologisms) are inflected according to this rule or integrated into this class (more in Dressler and Thornton 1996). Accordingly, e.g., verbs have just 1 prod. microclass in English and 2 in German (weak verbs with and without *ge-* prefix in PPP), 1 in French (type *parl-er* 'to speak'), in Italian 1 fully and 1 slightly prod. microclass (*parl-a-re* vs. *fin-i-re* 'to end'), etc. For children, in our work, productivity of an inflectional rule, e.g. of noun plural formations, means 1) that the child uses both Sg and Pl of the same words spontaneously and with reference to singularity vs. plurality, 2) that there are at least three different word types with several tokens, 3) that the marked form (here: Pl) is neither formulaic itself (e.g. idiomatic) nor used only in a constant context; even more telling are adequate self-corrections or corrections of the interlocutor and overgeneralizations (cf. Brown 1973). Thus a child may use an adult unprod. rule productively, at least in a descriptive sense. This is also true in an explanatory sense, if our assumption is correct that the acquisition of morphology (at least when an inflectional submodule dissociates) implies the acquisition of morphological productivity, before its adult restrictions are learnt. In this sense overgeneralizations represent overproductivity.

prendo 'I take', 2.Pl *prendete*, Inf *prendere*, PPP *preso*; *temo* 'I fear', 2.Pl *temete*, PPP *temuto*.

1.4.3. Greek

Prod noun classes (plus Def Art) are m *o patéras* 'father', Gen *tu patéra*, Acc *tom batéra(n)*, f *i mitéra* 'mother', Gen *tis mitéras*, Acc *ti mitéra(n)*, Pl *i patéres/mitéres*, Gen *tom batéron/mitéron*, Acc *tus/tis batéres/mitéres*; neuter Nom, Acc *to máti* 'eye', Gen *tu matiú*, Pl *ta mátia*, Gen *ton matió(n)*; there are other (un)prod classes.

Stressed Pers Pro: 1. *egó* Pl *emís*, 2. (*e*)*sí*, Pl (*e*)*sis*, 3. m *aftós*, f *aftí*, n *aftó* Pl *aftí*, *aftés*, *aftá*.

Verbs have prod denominal microclasses: *-ízo*, *-óno*, *-áro*, e.g. Pres Ind Sg *harízo* 'I present', *harízis*, *harízi* Pl *-ízume*, *-ízete*, *-ízun*; Imp *hárize!*⁵ Impf *háriza*, aorist *hárisa*, Fut *tha harízo*, Subj *na harízo*; there are many irregular verbs; PPP and perfect (Aux + PPP) are not among the morphological categories acquired early (see Stephany 1989: 147, 155).

1.4.4. German

Prod noun classes (plus Def Art) are m *der Park/Fall* 'park/case', f *die Pizza*, n *das Kino* 'cinema', Pl *die Parks/Fälle*, *Pizzas* (= *Pizzen*), *Kinos*; Indef Art: m/n *ein*, f *eine*; there are 3 oblique cases.

Verbs (with preceding pronouns) have 2 complementary prod microclasses formed by weak verbs: Pres Sg *ich lege* 'I put', *du legst*, *er/sie/es legt*, Pl *wir legen*, *ihr legt*, *sie legen*; Imp *leg!*, (dial. 1.Pl Imp *legma!*), Inf *legen*, PPP *ge-leg-t*, Past (Aux + PPP): *ich habe gelegt*, *ich habe kritisiert* 'have criticized'; unprod strong verbs: e.g. *ich nehme*, *du nimmst* 'I, you take', PPP *genommen*; Inf *singen* 'to sing', PPP *gesungen*, etc.

2. Premorphology

Sophie: 1;6-1;10 – *Matteo*: 1;4-1;8 – *Bernd*: 1;5-2;6 – *Lisa*: 1;4-1;7 – *Christos*: 1;7-1;10.

The premorphological phase is the phase which is most similar in all 5 children, since general cognitive principles such as minimal grouping, figure-ground distinction, transparency, indexicality, iconicity, inclusion, etc. (Dressler et al. 1987; Dressler and Karpf 1995; Bates et al. 1979; Johnston 1985; Hauert 1990) apply.

2.1. Fillers

Fillers have a prosodic function, first without morphology-determined differentiation. They appear in unstressed positions before a stressed item, e.g. *Sophie* (1;7) *ə do(do) ← F (il y en)⁶ a deux* 'F there are two' / *F (il fait) dodo* 'F (he) sleeps' or *Matteo* (1;6) *a cane ← il cane* 'the dog'. They do not necessarily replace a

particular morpheme of the target language: see *Matteo* (1;8) *e pange ← piange* 'he cries', *e domme ← dorme* 'he sleeps', cf. *Bernd*'s and *Lisa*'s fillers before deictics: *ə da(s) ← da(s)* 'there, this'.

Bernd (2 types/94 tokens)⁷, *Lisa*, (*Christos*: see 3.) have exclusively prenominal and predeictic fillers in premorphology, maybe due to the scarcity of verb forms (see 2.3.). *Matteo* has 2/13 preverbal fillers. *Sophie* shows already prenominal (5/240) and verbal/preverbal fillers (5/152). Notice that *Lisa*'s fillers present one major difference to the other children's fillers: it seems that very early they are, albeit unsystematically, distinguished for definiteness: Def → d+V, Indef → V+(C). Does this mean that they grammaticize extremely fast (or from the beginning)?

At the end of premorphology, fillers extend their domain. *Sophie* starts to combine fillers with infinitives and to differentiate them pragmatically. In the structures F+Inf, fillers, as cosignals, have a regulatory function, i.e. together with the Inf they give the sentence the meaning of an order: e.g. (1;9) *a nene Maman ← F donner, Maman* = 'donne-moi, Maman' 'give me, Mum'; *Matteo* extends fillers to verbal position and they obtain the same pragmatic function as the fillers of *Sophie*, e.g. (1;4-1;5) *acca o, ə gliacca ← voglio acqua* 'I want water'.

2.2. Syntax

All 5 children show mostly holophrases, at least at the beginning of premorphology. By the end of this phase, *Sophie* (1;10) and *Christos* reach the 2-word stage: *Sophie*'s 2-word utterances increase to 15% of the utterances of the recording session, i.e. twice as much as before with more varying types.^{8, 9}

2.3. Verbs

Inflected word-forms are rote-learned (see MacWhinney 1978) with restricted pattern selection. Verbs have at most 2 forms, very few tokens; categories used are: mainly imperative (*Sophie*: 8/21, *Matteo*: 1/7, *Christos* 3/4), infinitive (*Sophie*: 15/56) and present ind. 3.Sg (*Sophie*: 1. conj.: 18/27, others: 7/101¹⁰ *Matteo*: 1/2, *Christos*: 5/28). Examples: French (1;6), Imp *attends* 'wait', Inf *boire* 'to drink', Pres 3.Sg *dort* 'sleeps'; Italian: (1;6) Imp *ap(r)i ←* 'open', Pres 3.Sg *domme ← dorme* 'sleeps'; German (*Lisa* 1;4): Imp *komm* 'come', Inf *zeigen* 'to show', Pres. 3.Sg *Bär beiss ← Bär beisst* 'bear bites'¹¹ Greek: Pres 3.Sg (1;8.12) *k(l)éi* 'cries', Imp (1;8.21) *kíta* 'look'.

Sophie's premorphology seems to be the richest premorphology on that particular point (53/243/2080 total words/1600 total utterances), with categories such as (un-

⁷ The types correspond to the main phonetic realizations of the fillers (vowel quality, etc.).

⁸ 21 (12 occurrences of the type NEG+X, i.e. 10 different types) /270 utterances > 31 (22 types) /208 utterances. *Christos* has 16 occurrences of 2-word utterances and 1204 holophrases in this period.

⁹ First 2-word combinations occur already at 1;6, see also Clark (1985).

¹⁰ On the higher type frequency of first conjugation versus higher token frequency of other conjugations, see Guillaume (1927).

¹¹ *Bernd* has no verb yet – but bare verb prefixes.

⁵ Greek has no infinitive.

⁶ F = filler, parentheses indicate what is missing in the corresponding adult version.

prototypical) PPP (5/19, e.g. (1;8) *tete* ← *cassé* ‘broken’) and periphrastic Fut (frozen *on va voir*: 5), in addition to Inf, Imp and Pres Ind. 3.Sg.

2.4. Nouns

Nouns are all singular in every child, only Matteo shows 6/11 plurals, e.g. *pappi* ← *scarpe* ‘shoes’. However, apart from 2/2 (Sg *datto*, Pl *tatti* ← *gatto/gatti* ‘cat(s)’, *cillio, cillii* ← *uccellino/i* ‘little bird(s)'), Matteo’s plurals have no Sg counterpart and are therefore, with all probability, rote-learned and non-decomposed forms. One rote-learned Pl form also appears in Christos: (*porto*)*kália* ‘oranges’.

All children but Sophie have diminutives (DIM formation is not productive in French anymore). These DIM however are unanalysed. Only in Bernd’s data, DIM (and hypocoristics) with non-DIM counterparts can be found (3/19 between 1;9 and 2;7): *Lisa* – *Lisi*, *Vogel* – *Vogi* ‘bird’, *autsch* – *autschi* ‘ouch’. But these forms cannot prove morphological analysis (decomposition), because 1) all forms are taken over from adult child-centered speech, 2) *Vogi* (vs. *Vogel*) is morphotactically opaque, 3) *Lisa/i* reflect differential adult addresses, 4) the interjections vary also with *au*, *aua*, and *auweh*, 5) no pragmatic (or semantic) differentiation can be detected.

2.5. Extragrammatical morphology

Extragrammatical morphology is less productive in these filler children than in many other children of the project. The examples are nevertheless significantly limited to the premorphology phase: onomatopoeic words occur in Sophie (7/73/2080 word-forms), e.g. (1;6) *poum, boum*, etc. ‘to fall’, *mnam, miam, ananan*, etc. ‘to eat’, (1;7) *papam* ‘elephant’¹² Matteo (15/20): e.g. *baubau* (dog), Bernd: e.g. *daodao* (dog); Lisa: e.g. *wauwau* (dog), *kike* ← *kikeriki* (cock). Truncations occur mainly in Matteo (23/33), e.g. (1;4) *tàa* ← *chitarra* ‘guitar’. Bernd uses interjections as extralinguistic means for action-related speech acts (5/265): e.g. *hu?u* ‘turn, (I) want to see the next page in the book’ or *au!* ‘burns/is hot/dangerous/forbidden/attack’.

A first isolated blend, Gr. *búme*, appears in Christos (1;8.12): from onomatopoeic *bum* and the synonymous aorist *épese* ‘it fell’.¹³

3. Transition to protomorphology¹⁴

Sophie: 1;10-1;11 – *Matteo*: 1;8-1;10 – *Bernd*: 2;6 – *Lisa*: 1;7-1;8 – *Christos*: 1;10-1;11.

With the transition to protomorphology more important differences emerge

¹² Because of a song where elephants sing [*papam*] (metonymy).

¹³ The unblended aorist form occurs once at 1;9.3.

¹⁴ We assume a transition phase when there are first symptoms of a (new) morphological activity, consistency of forms for certain functions but no clear clustering of innovations indicating a boundary. It cannot be expected that all relevant symptoms of protomorphology and of modularized morphology appear simultaneously in production.

among children. Matteo generalizes a truncated form of the Def Art (m) *i(l)* (10) and (f) *(l)a* (13).

Lisa develops the Indef Art, i.e. she uses mostly correctly the m n *ein* ‘a’ and f *eine* besides a truncated **ei*. Also, after a few rote-learned occurrences of the 3 Sg Def Art *der, die, das* in premorphology, the forms *de, d’, der* and *die* can be found.

Both children have now reached the 2-word stage.

Plural verb forms appear in Matteo (3/3), e.g. *dommoo* ← *dormono* ‘they sleep’, and Lisa: *schauma* ← *schau-ma* (1.Pl dialectal suffix) ‘let us look’, *tumma* ‘let us do it’, which may mean that there is some early morphological activity.

Christos starts with case-marking, i.e. with the marker *-s* of Nom Sg in masculines of the major declensional class (5/16), e.g. (1;11.10) *papú-s* ‘grandfather’, *Pítso-s* ← *Hrístos* and with the prod use of a verb, i.e. Pres 3.Sg (*th*)*eli* ‘he wants’ (36 tokens in the two subsequent recordings, 1;10.18 and 1;10.24, 83 tokens in the whole transition subphase).

Sophie introduces the new category of compound past, with examples outside the 1st conjugation class (prod microclass): *est parti* ‘is gone’ (4 tokens)¹⁵

DIM increase in Matteo (17/20 against 11/16 in premorphology) and are used productively, i.e. the child produces forms that never occur in the parents’ dialect: from the lexicalized DIM *golfino* ‘sweater’ he builds *golf-e tto*; from *guantino* ‘little glove’ *guantetto*; he also reanalyzes the lexicalized form *cappuccio* ‘little cap’ as a DIM variant of *cappotto* ‘coat’. In this subphase, there is no difference in semantic meaning between the DIM and its simplex. DIMs have the pragmatic function of referring to a child-centered speech situation (cf. Dressler 1994).

Extragrammatical activity is reduced: Sophie’s onomatopoeic words are progressively replaced by verb forms, e.g. in this period *poum* becomes *tombé/est tombé* ‘fell’¹⁶ and no onomatopoeic word occurs after 1;10; the truncated forms of Matteo gradually decrease: e.g. *i fanti* > *gli elefanti* ‘the elephants’, *il abus*¹⁷ ‘the bus’ > *l’autobus* ‘the bus’.

Already in transition to protomorphology (see 4.), a first isolated analogical word-form appears: Sophie *poum-er* ‘to fall’ from the onomatopoeic word *poum* cooccurs for a short period of time (half a month) with *tomber* (information from the mother).

Christos, who seems to have early morphological activity, develops two types of blind alleys for the subjunctive with the proclitic particle *na*. The first verb type of Christos’ blind alley is [*ko:ni*] ← *na sikóni* ‘please get up’ (2 tokens) and the

¹⁵ Earlier examples of compound past of the 1st conjugation class might have occurred. However, because of the occurrence of fillers in preverbal position, they are very difficult to identify and to distinguish from bare PPP or from Inf.: for instance *atate* ← *cassé* or *a/est cassé* ‘broken or broke/is broken’. This verb form is frequent in premorphology, with a filler by the end of this phase and occurs only sporadically afterwards. Consequently it should rather be analyzed as a PPP.

¹⁶ Information from the mother. One ambiguous example occurs in our corpus at 1;11: *epabe* ← *est tombé/F tombé* and 2 less ambiguous occurrences in the subsequent recording.

¹⁷ With the main variant of the m art. *il*.

second one [ko:pi] ← *na kópsi* ‘please cut it’ (2 tokens). In both cases, vowel lengthening replaces subjunctive with proclitic *na*. Very soon Christos abandons this blind alley and starts (next recording) with a new one which lasts longer: the reduplicative blind alley, see 4. protomorphology.

4. Protomorphology

Sophie: 1;11-2;2 – Matteo: 1;10-2;1 – Bernd: 2;6-2;11 – Lisa: 1;8-1;9 – Christos: 1;11-2;4.

4.1. Morphological activity

In protomorphology all children start to construct morphology (with very few and isolated precedents in the transition period before) and try certain rules or apply certain patterns. First analogical verb-forms appear: French (2;0) *afafe* ← *F(s)’asseoir* = ‘*assieds-toi*’ ‘sit down’, based on the 1st conjugation, Italian regularized PPPs: (2;0) *ho bevito* ← *ho bevuto* ‘I have drunk’, *è nascondato* ← *è nascosta* ‘is hidden’, *mi ha puntito* ← *mi ha punto* ‘it pricked me’, as well as several blind alleys.

Let us first consider Bernd’s acquisition of articles: this acquisition is marked by three blind alley developments; first, still in the premorphological phase (2;2), he replaces pure vowel fillers with more Art-similar fillers of the type *də* or *di* (2/2), but afterwards drops or at least avoids them. At the beginning of the protomorphological phase (2;7) he first tries again with forms such as *ae* ← *eine*, *hi* ← *die*, *də* ← dialectal Def Sg m Nom, and even one full form: Indef Sg f Nom *eine* (4/6), but then discontinues using these forms. Instead, he develops a morphological filler system with *ə*, e.g. (*ə tuutu* ← *das/ein Auto* ‘car’) contrasting with *u* which appears with words beginning with *u*, e.g. *u.uts* ← *der Zug* ‘train’, *u.ua* ← *die Uhr* ‘watch’. This *u/ə* filler is overgeneralized to almost all prenominal positions during 2;8/2;9, where only one Art can be found as a single attempt: *der Pepier* ← *das Papier*. At 2;10, the *u* filler type is completely given up, and most fillers are now represented by a full vowel *e*, mostly as *he* or even *hev* ← Def Sg m *der*. Even 1/1 non-imitated Def Sg m dative *dem* in a possessive construction can be reported: *dem Papa* ‘to the dad’, cf. also *noch eins* ‘another one’ (1/11). From 2;11 to 3;1, articles are missing in the data, whereas at 3;2 (end of transition phase) the Indef and Def Art are acquired and used as Nom or Dat. in Sg and Pl.

Christos’ blind alley consists of reduplicative fillers (plus indicative) for the subjunctive proclitic particle (plus subjunctive): *kokópi* ← *na kópsi* ‘to cut’ (1;11.13 – 2;1.22). The reduplication has a prosodic function but is morphologically restricted: thus it has to be considered as an already grammaticised filler (see 4.5.). This blind alley replaces the restricted blind alley of vowel lengthening for subj. and is more systematic: out of 28 Subj tokens there are 11 (3.Sg) *kakáni* ← *na káni* ‘to do’, 1 (3.Sg) *kakátsi* ← *na kátsi* ‘to sit’, 2 (3.Sg) *pipí* ← *na bi* ‘to get into’, 6 (1.Pl) *pepétsume* ← *na péksume* ‘to play’, 1 (3.Sg) *papáli* ← *na pári* ‘to take’, 2 (3.Sg) *pepétsi* ← *na péksi* ‘to play’. In 2 examples the reduplicative vowel seems to be assimilated to the labial consonant, i.e. (3.Sg) *pupáji* ← *na pári* ‘to

take’ and (1.Pl) *pupétsume* ← *na péksume* ‘to play’¹⁸ Between 2;1.14 and 2;1.22, the Subj particle *na* appears for the first time with 3 occurrences of *na pétsiume* ← *na péksume* ‘to play’, in parallel with reduplicative forms. In the subsequent recordings, the use of the particle alternates sometimes with zero. But reduplicative fillers – which covered 82.1% of the Subj tokens – have disappeared.

4.2. Syntax

Protomorphology shows a syntactic spurt.

As far as Sophie is concerned, 2-word utterances with verb reach almost 50% of the utterances with verb (29/61) against 22.5% in the preceding recording (9/40).¹⁹

Matteo introduces prepositions and builds first complex sentences: e.g. Inf complement clauses: *i metto a dommie* ← *li metto a dormire* ‘I put them to sleep’; structures with patient (direct object) and instrumental (prepositional phrase): *colla mano l’ho massata quell’ape* ‘with the hand I killed (*ammazzata*) that bee’. He uses also for the first time a few examples of modal + Inf structures (5/7): e.g. *posso andare?* ‘can I go’, *voglio togliere* ‘I want to take away’.

Bernd uses adjectives as predicates or attributes. First examples of agreement with inflected adjective are attempted: *wieder kaputt-es* ← *wieder ein Kaputt-es* ‘again a broken one’, *Auto grosse* ← *grosses Auto* ‘big car’.

Christos produces longer sentences such as *timóni to kikino iko bébe* ← *to timóni tu aftokinitu tu BMW tu Niku* ‘the steering wheel of the BMW car of Nikos’.

There is a first advance in article use in Sophie and Bernd who didn’t have any so far; with Sophie the Indef Sg m *un* becomes suddenly frequent: from 1 isolated occurrence 3 weeks before, and 9.8% (5/51) 10 days before, at 2;0 it occupies 14.6% (13/89) of the prenominal positions.

Lisa improves her use of the Indef Art, whereas Matteo pairs all nouns (66/75) with the right Def Art (Indef Art appear only in modularized morphology because they are rare in the input).

4.3. Nouns

Bernd and Lisa show the first prod noun plurals with a Sg counterpart.

In Bernd, they emerge at 2;7 where they are in *-n* (4/16), e.g. *Baum* vs. *Baum-en* ← *Bäum-e* ‘trees’, *Fuß* vs. *Fuss-n* ← *Füss-e* ‘feet’, in other words, Bernd selects just 1 of the adult prod allomorphs; for many words, Pl is avoided (cf. Vollmann et al. this volume). The prod *-e* follows chronologically at 2;8 (4/9).²⁰

Matteo increases the number of noun plurals (19/31) but generally still without their singulars (3 tokens only).

¹⁸ Phonological consonant harmony occurs for words that contain difficult segments or for long words: e.g. *pupi* ← *Gúfi* (Disney hero) (and also once partial reduplication *púpi, papúpi*), *nínios* ← *pinguínos* ‘penguin’.

¹⁹ The total number of utterances in these recordings are 159 and 218.

²⁰ More in Vollmann et al., this volume.

Christos uses correct declension for 2 classes of Sg nouns. At the beginning of protomorphology, 22/157 f and m nouns occur (Nom, Acc and Gen in the first major class, Nom, Acc in the second major class), and only 4 mistakes are made. In the neuter he uses only Nom and Acc. The Gen of the second major class is acquired at the end of this period, i.e. at 2;4. In other data, however (cf. Stephany 1997) the Gen (especially second major class and neuter) is generally a very late achievement (Stephany: consistent marking only at 4;10.). One reason why Christos has acquired the Gen so early is perhaps because he denotes possession with the Gen rather than with the possessive pronouns (see Stephany 1997; Christofidou and Stephany 1997).²¹

Christos' DIM increase at 2;4: from 2/29 at the beginning of the phase²² to 20/52. In this period there are indications that the child is realizing the semantic meaning of DIM, e.g. (2;3.23) *aftó dhen ine tzíp, aftó ine tzíp-áki* 'that is not a jeep, that is a little jeep (DIM)'.

Bernd inflects at least half of the adjectives.

4.4. Verbs

All children but Sophie have now several of the person categories in Sg and in Pl: in Christos only the 2nd Pl is missing²³ (in Matteo the 2nd and also the 3. Pl).

Matteo differentiates 4 conjugation subclasses, all prod: e.g. *mettiamo* (Inf *méttere*) 'we put', *dommiamo* ← *dormiamo* (*dormire*) 'we sleep', *vediamo* (*vedere*) 'we see', *sono caccate* (*cascare*) 'they have fallen'.

Sophie slowly develops some paradigmatic activity and builds a few mini-paradigms up to 3 terms: 9 from the 1st class + 9 from other microclasses or isolated paradigms, e.g. *mord* (4) – *a mordu* (3) 'bites; bit', *entend* (1) – *a entendu* (1) 'hears; heard', *dit* (2) – *dire* (2) 'says; to say', *fait* (3) – *a fait* (1) 'does; did', *part* (2) – *est parti* (7) – *partir* (3) 'goes; is gone; to go', *met* (3) – *a mis* (3) – *mettre* (23) 'put', etc.

Bernd has constituted his first inventory with more than just the unmarked categories, i.e. Pres 3.Sg (17/42), Imp 2.Sg (5/8), Inf (16/41), PPP (6/12) and Imp 1.Pl (2/2). Mini-paradigms are, e.g. (2;10) *schlaft* (4), *schlafen* (2) 'sleeps; to sleep'; *pickə* ← *picken* (2), *pickt* (1), *pick's* ← *pick es* (1) 'to stick; sticks; stick it'.

Matteo has 2 verbs occurring in more than 1 form: e.g. *dormiva* 'was sleeping', *ha dormito* 'has slept', *dormono* 'sleep'; *c'è* 'there is', *c'erano* 'there were'.

But generally speaking, there seems to be no real paradigmatic organization in protomorphology, and inflectional productivity is limited.

The unprototypical PPP is now present in all children (Matteo last), except Christos, but has become rare in French: from 11% of verb forms in the transition to protomorphology (11 tokens/101 verb forms) to 2.7% in protomorphology (12/436 verb forms), because it has been replaced by compound past: 4/7 PPPs between

2;1 and 2;2, 14/17 compound past (AUX+PPP).

Also language-specific is Christos' prod use of aorist and Subj (in the perfective aspect): from 2/3 aorist and 10/13 Subj at the beginning of protomorphology (see note 22) to 6/40 and 19/46 at the end.²⁴

Infinitives have now appeared in Matteo (see 4.2. above).

4.5. Fillers

Fillers are numerous in all children: e.g. Sophie's fillers peak at 2;0 with about 80% in prenominal and preverbal position (preverbal fillers: 38/49 verbal forms, prenominal fillers: 41/51 nominal forms), more than 100 fillers vs. 330 words in the same recording (4 types); Bernd's fillers peak as well: 252. Of these, almost 20% are not identifiable in their function, whereas about 50% most probably replace articles, the other half replaces verbs, pronouns, and prepositions. Chronologically, protomorphological fillers replace mostly Art in the beginning, whereas other replacements are observed more and more often towards the end of the phase (2;10-2;11, see below).

In protomorphology, fillers become more grammatical, i.e. they acquire syntactic functions: Sophie frequently adds a filler before a proper name (20 tokens), which can be analysed as an indication for the deictic *c'est* (adult form occurs regularly from 2;4 onwards, i.e. in transition to modularized morphology) or for a cleft sentence (4 tokens) *c'est...qui* (1st non-ambiguous occurrence at 2;4), e.g. *asafi (r)ega(r)der* ← *F Sophie regarder* ← *c'est Sophie qui regarde* 'Sophie watches', *a Maman dōt* ← *F Maman chante* ← *c'est Maman qui chante* 'Mum sings'. Moreover, at 2;0 *a* alternates with *ya* as a predicate of existence (5 tokens) (before that date there are only examples of a primitive frozen structure (*y*) *a deux*). Finally, first examples of fillers filling slots with prepositional function occur: *atejō ə Sophie* ← *F(le) camion F(de) Sophie* 'Sophie's truck', *a peur a Maman* ← *F(il) a (eu) peur F(de) Maman (le canard)* 'he was afraid of Mum' (the duck).

Bernd's fillers do not only stand for articles, but also for verbs (38 tokens) and prepositions (17 tokens) (from 2;10 onwards), e.g. *hu.v dag he: blu:men* ← *Vielen Dank fuer die Blumen* 'many thanks for the flowers'; additionally, they are partially represented by peripheral vowels instead of the contrast-reduced schwa forms, e.g. *he dino* ← *der Dino* 'the dinosaur', or *he unter* ← *geht unter* 'sinks' (lit. 'goes under'). Their function of replacing articles is not reduced, however (122 tokens).

Fillers also specialize or are more morphologically differentiated in this phase: they become exclusively preverbal in Matteo, e.g. (2;1) *e apie* ← *posso/puoi aprire?* 'can I/you open?', *a fazendo?* ← *cosa stai facendo* 'what are you doing?'.

Sophie's fillers show a temporary specialization in meaning for the structures F+Inf: there is a dissociation in meaning between F+finite forms and F+Inf (cf. Kilani-Schoch and Dressler in press). F+Inf forms have a future/modal and regulatory value: e.g. (2;0) *atetir* ← *il veut sortir* 'he wants to go out' or *asafe* ← *F (s)'asseoir* = *assieds-toi* 'sit down', whereas F+finite forms have a descriptive

²¹ For Christos' use of Nom and Acc Pl forms, see Christofidou 1996.

²² First recorded 90 minutes (1;11.13 – 2;0.7).

²³ A form rarely used in this kind of discursive context.

²⁴ Last recorded 90 minutes of the phase (2;4.1 – 2;4.12).

meaning: e.g. \emptyset *balance* \emptyset *bateau* \leftarrow *F(il) balance F(le) bateau* 'the boat is swinging' or \emptyset *dort* ϵ *bébé* \leftarrow *F(il) dort F(le) bébé* 'the baby is sleeping'.

5. Transition to modularized morphology

Sophie: 2;2-2;4 – *Matteo*: 2;1-2;3 – *Bernd*: 2;11-3;3 – *Lisa*: 1;9-2;2 – *Christos*: 2;4-2;7.

The subphase of the transition to modularized morphology is characterized by apparently contradictory changes.

5.1. Syntax

More syntactic complexity comes in: children start to produce two-argument sentences, e.g. *Sophie mett(re) au dodo bébé* \leftarrow *mettre (le) bébé au dodo* 'to get the baby to bed', *Matteo, ci faccio uno shampoo al cocodrillo* \leftarrow 'I make (made) a shampoo to the crocodile'.

Christos has first subordinate clauses, e.g. *éla na fás* 'come to eat', *kita ti ékanes* 'look what you did'.

Bernd develops main clause syntax, filling verbal slots mostly with verbs, e.g. (3;0) \emptyset *kommt schon* \emptyset *Zug* \leftarrow (*der*) *Zug kommt schon* 'the train comes already', and even subordination, e.g. *Mama hF tistu* \leftarrow *Mama, wo bist du?* 'Mum, where are you?'

Modal+Inf structures appear in three other children: e.g. *Bernd*: *mag ich das anschauen?* 'litt. may I that see?'; *Lisa*: *möchte malen* '(I) would like to paint'. *Sophie's* examples range from 2/6/46 Inf (2;2.27), 4/7/28 (2;3.9) to 6/8/50 (2;3.22).

5.2. Fillers

At the same time there is a drastic decrease of fillers²⁵ or even disappearance of fillers, as in *Matteo* and *Christos*. This is accompanied by the development of articles, although not directly related to it: bare nouns increase temporarily in *Sophie* (up to 2;3.9: 37.5% [45/120]²⁶ and *Lisa's* language, together with the correct use of articles, e.g. *Sophie* develops Def Pl Art (2;3.9) and *f* as well as Pl Indef (2;4.12).

In *Bernd*, fillers extend to pre-utterance position \emptyset *da is* \emptyset *dino* 'F there is F dino' and to other syntactic slots *hə Säge hə Loch həgraben* 'F saw F hole F dig' = 'the saw saws a hole', *Mama* \emptyset *bist du?* 'Mum, F are you?', especially to modal verb (\emptyset *mitfahren* 'F go with' = 'X wants to go with (the train)') and to pronoun plus modal verb positions: *aber həhə Reifen bauen* 'but F wheels build' = 'but I want (you) to build wheels'. There is no correlation between number of fillers and development of articles, since articles emerge (Def and Indef used as Nom and Dat in Sg and Pl) while fillers are extending their functional domain.

²⁵ E.g. *Sophie*, 2;2.13: 24% (27/113) of prenominal fillers against 60% (57/97) at 2;1, 17% (25/135) of preverbal fillers against 79% (42/53) at 2;0.

²⁶ The proportion of bare nouns in protomorphology and in modularized morphology (for different reasons) is below 20%, e.g. 2;0: 16,3% (8/45) – 2;4: 17,8% (27/152).

5.3. Morphological activity

Among the blind alleys, the most impressive one consists of *Bernd's* totally unmotivated pre-utterance fillers: virtually every utterance starts with a filler, be it a segmentation error, e.g. \emptyset *go:n* \leftarrow *Waggon* 'wagon', a substitute for an Art, e.g. \emptyset *Brauzieher* \leftarrow *der/ein Schraubenzieher* 'the/a screwdriver', a substitute for another category, e.g. \emptyset *unser Zug* 'F our train' = 'this is? our train' or completely unmotivated in adult language, e.g. \emptyset *schau!* 'F look!'. That this type of filler is a child-specific category is supported by the fact that *Bernd's* older sister adopted this feature as a marker for baby talk.

Several analogies occur: *Sophie* makes new verbal analogical formations with class change: (2;2.) *mettre* \leftarrow *mettre* 'to put', [*apir*] \leftarrow *appuyer* 'to press', (2;2.13) *a rendu* \leftarrow *a pris* 'took', (2;3) *descender*²⁷ \leftarrow *descendre* 'to go down'; *Matteo* creates the verb *candelare* 'to play with the candle' from the noun *candela* 'candle'.

Christos overgeneralizes the ending of Pres 1.Sg -o and applies it sometimes to the aorist as well (3/29 aorist tokens), e.g. *ékan-o* \leftarrow *ékan-a* 'I did'.

Analogies happen in the noun with *Bernd*: he distinguishes all 3 prod classes of plural formation (-e, -n, -s) and applies them analogically to an adult Pl: **Hunde* \rightarrow Pl **Hunde-n* 'dogs'; **Räder* \rightarrow Pl **Räder-n* 'wheels' (cf. Vollmann et al. this volume).

5.4. Verbs

The new category of compound past appears in *Lisa*, *Bernd* (3;3) and *Matteo*.

Matteo has compound past with verbs of all conjugations (8/12 at 2;2 and 2;3, 4/6 for the first conjugation (prod), 2/4 for the second, 2/2 for the third), e.g. *l'ho mazzata* (1. conj.) 'I have killed it', *e motta* (3. conj., irreg.) \leftarrow *è morta* 'she is dead'.

Sophie tries the Inf dominance route: during one month (2;2-2;2.3), there is an increase in bare Inf (and F+Inf) up to 57% of verb forms (42/176/310 verb forms) (against 30.7% in protomorphology [25/134/436 verb forms]). Except for 2 verb forms,²⁸ every new type of verb or verb form outside the prod microclass is an Inf. *Sophie* seems to have understood that within French verb paradigms and verb classes, only the first class (type *laver*) is productive. In this way we can interpret the fact that, during the first month of the transition period, she introduced new verbs of the first class in all inflectional categories available to her, whereas she produced new verbs of other classes and paradigms only in the Inf, mostly as bare Inf, or F+Inf.

5.5. Nouns

As shown already with the verb, in this transition phase, inflection becomes more productive.

²⁷ Information from the mother.

²⁸ (2;2.13) *a rendu* \leftarrow *a pris* 'took' (analogy after verbs such as (2;1) *t'as entendu* 'you have heard') and (2;2.13) present Sg *peux* 'can'.

Christos and Bernd differentiate major classes of nominal Pl, e.g. Bernd: *-n* (5/8), *-e* (4/7), *-s* (2/3), Christos: m/f *-es* (6/13) and neuter *-a* (11/17)²⁹ are productive and represent correct use of all the Pl tokens.

Lisa shows first instances of congruence between adjective and noun: *blöd-es Schweindl* 'stupid piglet', for nouns and DIM cf. Vollmann et al. (this volume).

DIM are numerous in Matteo (35/55).

6. Modularized morphology

Sophie: 2;4-, *Matteo*: 2;3-, *Bernd*: 3;3-, *Lisa*: -, *Christos*: 2;7-.

6.1. Syntax

Syntax improves: all children have subordinate sentences. In addition to complement clauses which occurred already in the transition, e.g. Christos has now relative, conditional and temporal clauses: (2;7.26) *thélo aftó, pu ine meghálo* 'I want it, which is big', (2;10.9) *áma boró tha ti páro* 'if I can I will take her', (3;0.33) *ótan kimithúme tha fiji o ilios* 'when we sleep the sun will go away'. This is similar to Matteo, who had only relative clauses in the preceding transition phase and now uses causal and temporal ones.

Bernd has subordinate clauses for the first time, but they are still without conjunctions, and the verb is in final position: e.g. (3;6) *Schau mal hab ich gesehen hab* = lit. 'look have I seen have'.

Sophie has frequent and various Inf complement clauses and uses the correct prepositions, eg. (2;5) *(j)'arrive pas à mettre* '(I) cannot do it', *a fini de manger* '(he) has finished eating'.

Sentences are also expanded through coordination, e.g. Sophie (2;5): *ava* (← *je vais*) *chercher (l)a petite assiette li a* (← *et la*) *bavette et (l)a cuillère pour manger* 'I will get the little plate and the bib and the spoon to eat' or Christos (2;7.26): *edhó ine to Pórsche ki aftó ine Fórd* 'here is the Porsche and here is (the) Ford'.

6.2. Fillers

This is the last period of (morphologically very restricted) fillers. In Sophie their number decreases from 29 occurrences at the beginning of modularized morphology (i.e. less than half of the amount at the end of the transition to morphology) to 1 occurrence at 2;6.

Some fillers are in competition with their morphological replacements: e.g. in Bernd self-corrections of fillers by Art, e.g. (3;7) *hei, da is ə Radio, ein Radio* 'hey, there is F radio, a radio', *ə Bernd, der Bernd* 'F Bernd, the Bernd'. Other examples are Sophie's (and Bernd's) morphologized object fillers: 7-8 examples of these fillers, which are phonetic reductions of direct object clitics, appear until 2;9: at 2;6 and 2;7 *a* instead of *la*, at 2;7.18 *e* instead of *les*; non-reduced object clitics occur already at 2;3.21.

²⁹ Between 2;5.19 (first productive use) and 2;6.3, i.e. 90 minutes recording.

In Sophie's remaining fillers, a vowel quality change (opposite to the adult pattern) takes place before their complete disappearance: *e* and *ɛ* become predominant over *a*, and *ə* disappears. This is an example of a blind alley in modularized morphology.

Clitics increase (Matteo, Christos, Sophie): in Sophie, at 2;5 they occupy 25% of preverbal positions (fillers: 10%, bare verbs: 52% vs. less than 10% from 2;0.3 onwards) but do not linearly compensate for the disappearance of fillers: still many bare verbs persist well into modularized morphology.

Matteo (2;6-2;7) has at least 12 examples of clitics, e.g. *prendilo* 'take it', *lo prendo* 'I take it', he had only isolated proclitic instances before.

6.3. Verbs

The most characteristic feature of modularized morphology is the prod use of old and new inflectional categories, e.g. Matteo's Impf, Sophie's periphrastic Fut³⁰ Christos' past Impf and Bernd's compound past and stative passive. Analogical formations still occur in the verb: Sophie produces 1 or 2 examples per recording, i.e. 7/12 up to 2;7.18. She also uses the marked 3.Pl Pres for overgeneralizations in the Sg: (2;4.22/2;6.8) *ə dorme ma poupée à moi* ← *(elle) dort* 'she is sleeping my doll'; (2;4.22)³¹ *prenne...ta cuillère* ← *il prend ma cuillère*³² 'he is taking my spoon'.

Matteo shows more overgeneralizations: he extends the inflectional properties of the slightly prod microclass *finire, finisco* 'to end' (subclass of the 2. macroclass) to a small microclass of the corresponding unprod subclass (3/4): 1.Pr.Sg *coprisco* 'I cover' ← *copro*, PPP *coprito* ← *coperto*, an example of a shift from an unprod to a slightly prod class. He also derives a new verb *biciclare* from the noun *bicicletta* 'bicycle' (2 tokens).

Another strong support for our constructivist approach is Christos' first use of compound perfect: Christos starts to build compound perfect verb forms by persevering with or repeating the ending of the auxiliary; in other words he treats the non-finite form (PPP) of the verb as a finite form: (3;4) *éch-o kán-o* ← *éch-o kán-i* 'I have done', (3;6) *éch-ete plín-ete* ← *éch-ete plín-i* 'you have washed'.

Bernd used correct PPPs in transition to modularized morphology. In early modularized morphology, he produces analogical *geschneiden* ← *geschnitten* 'cut' (maintaining the Pres root), *gebohren* ← *gebohrt* 'drilled' (transforming a weak into a strong verb PPP). There are also overgeneralizations to 2nd, 3rd Sg of the 1.Sg without umlaut: e.g. *helf mir* ← *hilf mir* 'help me'.

7. Conclusion

In concluding our account we would like to summarize important differences

³⁰ 3 (end of transition to modularized morphology) → 13/167 verb forms (beginning of morphology) → 24/128 verb forms (2;5).

³¹ Sophie, very angry with her brother, is screaming.

³² There is a person shift *ta* ← *ma* in the possessive.

among children which seem to reflect language differences. Let us start with fillers. Christos and Lisa are less of filler children (these are individual differences). The rich filler production of Bernd is linked to developmental problems. It seems to be language specific, though, that Sophie has (with Bernd) the largest, the longest and the most varied use of fillers. They are precursors not just of articles and auxiliaries, like in the other languages, but also of proclitic person markers, prepositions and other function words, as well as of monosyllabic verbs. In other aspects of filler production, however, there are similarities among languages, e.g. fillers change function during the course of development, prenominal fillers seem to grammaticize before preverbal fillers (see also Veneziano and Sinclair in press).

Among all children, Sophie is the latest to acquire verbal person markers. This derives probably from French adult homophony of the present forms in the prod class (1. class) and in some unprod classes and paradigms which are distinguished only by the proclitic markers. Most adult forms have the same stem-form, e.g. *je/tu/il/elle parle* 'I/you/he/she talks' and 1.Pl (colloquial) *on parle*, 3.Pl *ils/elles parlent*. In colloquial French the 2.Pl is often the only form having a verb suffix, e.g. *vous parlez*, but the 2.Pl is the latest form acquired by all children.

In the acquisition of personal forms, the Greek and the Italian children are the first ones, the Austrian children are later, obviously due to extended homophony (see 1.4.4). In other words, both in terms of the adult system and of time of acquisition, German is between Greek and Italian on the one hand, and French on the other.

Christos is the first to acquire a synthetic past tense, i.e. the Greek aorist *hárisa* 'I presented', and the latest to acquire the PPP. This is probably due to the fact that the Greek compound perfect is rather marginal in the system, whereas French, Italian and southern German use the synthetic past much less than the compound past formed with the PPP, cf. Fr. *j'ai mangé*, It. *ho mangiato*, Ger. *Ich habe gegessen* 'I have eaten'.

Greek has no Inf but uses subj. constructions instead: Subj (*thélo*) *na haríso* 'I want to present' replaces the non-existing Inf, thus the subj. emerges early in Christos (protomorphology) whereas it is lacking in the other children.

Noun declension is richest in Greek, and accordingly Christos makes the earliest advances in its acquisition (protomorphology).

The non-prototypical word formation category of DIM is used in Italian and Greek much more than in the other languages; hence DIMs are more used by Matteo and Christos than by Bernd and Lisa, and with a pragmatic function. Matteo acquires the semantic meaning of smallness earlier than Christos because Italian has a prod augmentative formation which induces children to become aware of the size distinction between DIM and augmentatives, cf. It. *dentini*, 'small teeth' vs *dentoni* 'big teeth'.

But more important than these hypothetical input-determined differences are the similarities in the demarcation of pre-, proto- and modularized morphology. 1) The premorphological phase is characterized by holophrases, prosodic fillers, lack of creative morphological activities, importance of extramorphological formations. 2)

The protomorphological phase is instead characterized by morphological activities with the presence of few mini-paradigms, analogies, few productive rules, first grammaticization and blind alleys. 3) Finally, in the modularized morphology phase we can observe the emergence of a more complex syntax, productivity of inflection, construction of larger paradigms and disappearance of fillers.

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