

Agreement configurations in language development: A movement-based complexity metric



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Abstract

Three different agreement configurations in Italian (Determiner–Noun, Subject–Verb, Clitic–Past Participle) can be naturally ranked from a minimum to a maximum of complexity in terms of the movement operations they necessarily involve, and of the derived representations at the interfaces. We put forth the hypothesis that this complexity ranking has predictive capacities with respect to the timing of full mastery of the different configurations in acquisition: a more complex configuration is expected to be fully mastered later than a less complex configuration. We check the consistency of the predicted sequence with the available data from corpus studies. Then, we test the prediction experimentally through the Forced Choice of Grammatical Form paradigm with children of age three, four and five acquiring Italian.
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1. Overview

Agreement processes generally obey fundamental locality conditions. Nevertheless, different kinds of agreement involve somewhat different computational ingredients: some are necessarily satisfied in configurations derived via movement in multiple steps (e.g., past participle agreement with clitics in gender and number in many Romance languages), while others never involve movement (e.g., the agreement between a determiner and a head noun again in gender and number), and there are intermediate cases, involving less complex movement chains than clitic constructions. As a consequence of such computational differences, the surface configurations in which the agreeing elements appear can be quite diverse: maximally local in some cases, less local in others.

In the first part of this paper, we look at three different kinds of agreement configurations in Italian (Determiner–Noun, Subject–Verb, Clitic–Past Participle) which can be naturally ranked from a minimum to a maximum of complexity in terms of the derivational operations which they require and of the derived representations at the interfaces. We then turn to language acquisition, and put forth the hypothesis that the ranking in terms of complexity has predictive capacities with respect to the timing at which the different agreement configurations are fully mastered in development. After verifying the consistency of such predictions with the data available from corpus studies, we turn to the experimental part of the paper, and we test the predictions of the hypothesis through the Forced Choice of Grammatical Form (FCGF) paradigm. The complexity ranking is shown to predict the order of full mastery of the three different agreement configurations in development.

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2. Background: agreement configurations and locality

Agreement is a morphosyntactic process by which two elements are (externally or internally) merged in a local configuration and share certain morphosyntactic features. A prototypical case is subject–verb agreement in person and number (in most Indo-European languages; other languages may involve other kinds of features). The process is governed by strict locality constraints: for instance, a verb typically agrees with its local subject, not with the subject (or other nominal elements) of an embedded clause. Moreover, locality is established in hierarchical terms, not linearly. So, in a sentence like

(1) The picture of the girls is on the table

The verb *be* does not agree with the linearly adjacent adnominal complement *girls*, but with the head of the subject noun phrase *picture*, more distant in linear terms, but closer in the hierarchical tree structure.

All agreement processes are submitted to general locality constraints. Nevertheless, the surface configurations holding between the agreeing elements can vary, within a narrow range. This gives us the possibility of drawing a typology of agreement configurations, based on the more or less strictly local nature of the relation holding at the interface. In this paper we'll look at the following three agreement configurations (all illustrated by Italian examples, as the experimental data will concern Italian):

(2) a. D–N agreement:

| | |
|-----------------------|--------------------------|
| Le | case |
| The _{f,plur} | houses _{f,plur} |

b. Subj–V agreement:

| | |
|---------------------------|----------------------------|
| Gianni | parte |
| Gianni _{3P,sing} | leaves _{3P,sing'} |

c. Clitic–Past-Part agreement:

| | |
|-------------------------------|----------------------------|
| Gianni le | ha viste |
| Gianni them _{f,plur} | ha viste _{f,plur} |

(2)a is a case of agreement in gender and number between the determiner and the noun in a nominal expression, an agreement that in fact spreads, in Romance, to adjectives and other nominal modifiers. (2)b illustrates agreement in person and number between the subject and the inflected verb; (2)c is a case of agreement in gender and number between the clitic, attached to an auxiliary verb, and the past participle. Arguably, in all these cases agreement is checked under strict locality conditions, essential conditions defined by (external and internal) merge and a local search (or “Agree”) operation; nevertheless, the configurations holding at the interface between the agreeing elements differ significantly, due to independent properties of the constructions in (2). From now on, we will call the “source” of agreement the nominal element whose features are copied and the “target” of agreement the head in the functional structure of the DP or of the clause which receives the featural specification of the source: in the system of Chomsky (1995), the distinction coincides with the one between the element bearing interpretable (and valued) features and the one bearing uninterpretable (and unvalued) features.

Agreement and movement are closely connected computational operations. For instance, in Kayne's (1989) classical analysis, core agreement configurations typically involve movement of the source to a local configuration with the target; and further applications of movement may subsequently separate the two elements, giving rise to non-local interface configurations. We would like to capitalize on this connection between agreement and movement to differentiate the agreement configurations given in (2): the number and properties of movement operations involved in the different configurations will determine a natural gradation of the complexity of the configuration, which we will use as a generator of predictions on the developmental course. In presenting this idea, let us consider the three agreement configurations reported in (2), ranking them in terms of the movements operations necessarily involved.

The simplest case is (2a), D–N agreement, which does not involve movement at all: we may think of this kind of agreement as a morphological reflex of external merge putting these two elements together. Nothing moves here, in the normal case.¹

¹ It is not entirely obvious, in this case, which element is the source and which is the target; nevertheless, this is not crucial for our typology, as nothing moves in any case and the two elements remain strictly local at the interfaces. It should be noticed that this kind of agreement involves all the heads occurring in the stretch between D and N, e.g., Q and A in examples like *Le_{f,plur} molte_{f,plur} belle_{f,plur} idee_{f,plur} “the many beautiful ideas”*. The strong locality of the phenomenon is highlighted by an effect observed in Zamparelli (2000): an adjective which is invariable for number and gender, such as *blu* (blue) cannot appear prenominal, thus interrupting the continuous stretch of agreeing heads: *le_{f,plur} rosse_{f,plur} bandiere_{f,plur} della libertà* (‘the red flags of liberty’) vs **le_{f,plur} blu. bandiere_{f,plur} della libertà* (‘the blue flags of liberty’). It thus appears that the agreement in question is a direct reflex of external merge: as a new element is externally merged to N (or to a higher projection of the nominal system), it agrees in number and gender with it. We will not work out the details of the analysis of this DP-internal agreement (see Cardinaletti and Giusti, 2011 for relevant discussion).

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