

## *Micro-variation, Macro-parameters, and Language-acquisition*

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The parametric aspect of the P&P theory has been criticized on two grounds. As P&P morphed into the Minimalist Program, some see no role for parameters as classically conceived. Second, actual examples in the relevant literature manifest counterexamples.

Bio-physiological systems appear to be the result of relatively open programs, for which epigenetic regulation is as central as genetic endowment. Molecular biology has found stability beyond sheer genomes: in the proteome, microbiome, connectome in the case of brains—all strictly past “genetic endowment”. There is little to conclude from the biological substrate.

The general form of counterexamples is: “Your theory has *P* regulating  $\pm$ *property*. However, language *L* presents *+property* in domain *D* and *-property* in *D*’.” That reasoning, though straightforward, is limited to disproving *P*. To disprove a language acquisition device based on parameters one needs to come up with an alternative model of how children acquire language.

The present talk first clarifies the difference between micro-variation (not extending beyond observables) and macro-variation (correlating structure across unrelated domains). It is the putative existence of macro-variation that poses a (logical) language acquisition problem if negative instructions or supervised learning in general are missing.

To convince ourselves whether macro-variation exists, we could consider paradigms as follows:

- (1) *La vaca hay que la cuidar mientras yo voy saca-los porcós.*  
Spanish: “La vaca hay que cuidarla mientras yo voy a sacar los puercos .”
- (2) *Arena no tocar—arena no hace mía pues.*  
Spanish: “No toques la arena porque no es mía esa arena.”
- (3) Galician: *A vaca hai que a cuidar mentres eu vou saca-los porcós.*  
The cow has that CL tend-to while I go free-the pigs  
“The cow, you must tend to it while I’m releasing the pigs.”
- (4) Basque: *Harea ez ukitu—harea ez delako nirea.*  
Sand-the not touch sand not since mine-the  
“You mustn’t touch the sand, since the sand isn’t mine.”

Spanish speakers reject (1) and (2)—but micro-variant (1) sounds better than macro-variant (2). Frequency-wise (in primary linguistic data) *la cuidar* is as absent as *hace mía*. If macro-variation is real, experiments should detect psychological or neurological differences between (1) and (2).

The second perspective to address our impasse comes from cooperation with machine-learning experts. Generative grammarians are skeptical of connectionist networks having structural patterns emerge in unsupervised conditions. But such algorithms, as such, could help detect “dark” correlations among structural patterns, for appropriately tagged and thoroughly parsed corpuses. If dark parameters do exist, we might want to try 21<sup>st</sup> century technology to find them.