3. Poverty of Stimulus Arguments: Their Structure and Negative Evidence

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Carving out the logical space

Non-nativism
(behaviourism and associationism)
vs.
Chomskyan nativism

• Illuminated empiricism
• Weak nativism
• Relevant empiricism/nativism
Carving out the logical space

Five Chomskyan nativist claims:

– Representationism:
  • explaining language acquisition and competence requires postulating representational or contentful mental states and processes

– Biological Limitation:
  • There are restrictions from the innate character of the human mind on the possible hypothesis learners can consider during language acquisition

– Domain specificity:
  • Acquiring a language requires that the subjects’ thoughts about language be constrained by principles specific to language.

– Innateness:
  • The restrictions on a subject’s thoughts about language are in a certain sense innately codified.

– Universal Grammar:
  • Principles and restrictions needed for language learning are those of UG.

Carving out the logical space

• Putnamian empiricism: it accepts innateness, rejects domain specificity and UG.
• Illuminated empiricism: it accepts domain specificity, and it rejects innateness and UG
• Weak nativism: it accepts domain specificity and innateness; it rejects UG

Are Chomskyan arguments enough to get rid of all these positions, not only of Quine’s and Skinner’s views?
Chomskyan arguments

i. Poverty of Stimulus Arguments (Cowie thinks there are two kinds)

ii. Arguments from critical period (adult vs. child language acquisition/learning)

iii. Arguments from dissociations

iv. Arguments from creoles and pidgins

Chomsky’s PSAs (1986)

• The challenge: to account for the richness, complexity, and specificity of linguistic knowledge, given the limits of the primary linguistic data, that is, the evidence available to a child.

• Without instruction or direct evidence, at an early age children use complex rules without making mistakes, rules which do not depend on simple analogies or similarities. (Cf. Crain and Nakayama)

• The theorist’s aim is to obtain the grammar which the child acquires, namely, one that generates all and only those pairs of sounds/meanings (signs/meanings) of the language under study. The aim is to explain how a subject gets to the mature state of the Language Faculty from its initial state.
Cowie on PSA

According to Cowie, Chomskyans present two kinds of APSs:

a. The A Posteriori Poverty of Stimulus Argument
b. The Logical Problem of Language Acquisition or the Problem of Absence of Negative Evidence

The A Posteriori PSA

Learning a language requires learning its rules. There are two competing rules to explain the transformation of indicative sentences to yes-no interrogatives:

Mary is in Barcelona.
Is Mary in Barcelona?

(H1): To formulate a yes-no question from an indicative sentence the main auxiliary verb must be moved to the beginning of a sentence. (A structure-dependent rule)

(H2): To formulate a yes-no question from an indicative sentence the first auxiliary verb must be moved to the beginning of a sentence. (A structure-independent rule)

Both agree with the primary linguistic data obtained by the child, but children only acquire the right rule H1 despite the data supporting both rules. H2 is simpler than H1 for it does not require one to identify sentence structure. Thus, children must have an innate element that guides them in the task of selecting of H1, one that is richer than the one associated with simple empiricist mechanism.
The A Posteriori PSA

- H2 gives the right results for the following questions:
  
  *Bill can play the sax* ⇒ *Can Bill play the sax?*
  *The sky is blue* ⇒ *Is the sky blue?*

- But structure independence (H2) will not always give the right result, whilst (H1) will:
  
  *The man who is beating a donkey is mean.*
  *Is the man who beating a donkey is mean?*
  *Is the man who is beating a donkey mean?*

Cowie’s criticisms

I. Nativists have done very little to sustain their claim that PLD are really poor.
  - Children don’t make mistakes with yes-no questions by 3 years of age (Crain and Nakayama), which suggests that either that there is no need for evidence in favour of it or that there is evidence in PLD which falsify every incorrect rule
  - The case of “Motherese”: no such evidence
  - But, Sampson and Pullum: children’s literature contain complex constructions that would support H1 and falsify H2

So, there is more complexity in children’s primary linguistic data than what Chomskyans think.
Cowie’s criticisms

II. The argument does not exclude more sophisticated forms of empiricisms such as illuminated or Putnamian empiricism. Language learners may resort to more sophisticated heuristics and they may not be satisfied with superficial similarities.

*The man who is happy is singing.*
*Is the man who is happy singing?*
*Is the man who happy is singing?*

Is Cowie right?

1. Citing Motherese is contentious:
   - Motherese could be less simple than what Chomskyans assume
   - Children are exposed to more than Motherese (citing the Wall Street Journal)

2. The case of children of immigrants: they seem to have little evidence in the local language, but they may extrapolate from their parents language

3. Most importantly: information needs to be ubiquitous, that is, it must be present in all environments in which language develops, if empiricism is right.
Is Cowie right?

5. It’s certainly not evident that Putnamian and Illuminated Empiricisms could not respond to this argument. The challenge, however, is still there for them, viz. that there linguistic environments are as rich as they require.

6. The burden seems to be on the empiricists side.

7. It isn’t clear that Chomskyans’ rely on arguments like this.

The Logic Problem …

1. There is a large number of potential rules for a language, some of which are pretheoretically more simple and natural than the real rules.

2. There is little evidence as to which constructions are not part of language, that is, there is very little negative evidence which would allow children to recover from overgeneralizations or overgeneration and so to recover from mistaken hypothesis. An example is when a child overgenerates the simple past tense of the verb to go: went and *goed.

3. How is it then that children get rid of the hypothesis that overgeneralize if they do not have negative evidence?

Word of warning

Word of warning: Pinker does hold that there is morphological or lexical overgeneration, but no syntactic overgeneration:

*goed
went
*swimmed
swam

This will be important when we look at Crain and Pietroski’s response.

Cowie on the logic problem argument

• The argument aims at establishing as an a priori or logic matter that language could not be learned from the data available: PLDs are impoverished as a matter of principle and not just fact. They are impoverished before any grammar which is sufficiently powerful to generate a natural language.

• If there is no or hardly any negative evidence in the linguistic environment, then supposing that there is innate information helps explain language acquisition. Assuming innate domain specific information helps substantially.
Cowie’s criticisms

A. In defending domain specificity, the nativist claims that no domain general learning mechanism could sufficiently restrict the child’s choice of a hypothesis or rule. But it has not established that no empiricist model could explain how a child may learn a language by just being presented with certain sentences.

B. Arguments in favour of domain specificity and nativism assume that there is no negative evidence available to the learner when, as a matter of fact, there are sources of direct negative evidence in PLD, even if it is rare or infrequent. Indirect negative evidence is more frequent in the parents’ inability to understand children...

[... though Cowie (p. 211) admits that children are rarely corrected by their parents when they make mistakes and that PLD contain utterances which aren’t grammatically correct and which are not presented as mistakes. She seems to grant that PLDs are as a matter of fact noisy and lacks negative evidence.]

Cowie’s criticisms

C. This argument establishes that domain specificity is needed, but not innateness about that specificity.

D. Chomskyan nativists are committed to saying that children never overgenerate, but Pinker (a paradigmatic Chomskyan nativist) even admits that they do.

E. If the logical PSA were valid, it would show too much for the same problem would emerge for any learning that involves projection beyond our experience. The case in point: our curry concept. So there must be more negative evidence than nativists acknowledge. (Similar to Putnam’s argumentative strategy.)
Curries and general induction

• How do we acquire the curry (mole or salsa) concept?
• We are never explicitly told what are curries and what they are not, but we all coincide in our intuitive judgments about what is and what is not a curry
• So there is some domain specificity but, surely, no innateness
• This is the same reasoning as Chomskyans seem to be applying in building their a priori version of PSA, so those arguments prove too much.

Curries and general induction

• There must be more negative evidence than we initially may have thought for our knowledge of curries is not innate
• Analogously: the hypothesis that children formulate may affect their search for sources of negative evidence, and they may obtain more than what initially appeared
• The relationship between a hypothesis and its evidence (or lack of it) is probabilistic: one counterexample will not suffice to discard it, but many of them will
Main issues

• The curry argument must be answered
• The burden of argument should be set
• Is this the sort of argument that Chomskyans would endorse?
• What is the specific challenge with negative evidence?
• How much do children overgenerate?

A Chomskyan reaction: Crain and Pietroski

1. There is no genuine difference between the two PS arguments. PSAs are essentially empirical.
2. Cowie does not say how domain specificity can be acquired.
3. The mere possibility of empiricist alternatives does not diminish the strong argument in favour of Chomskyan nativism for it is the only one which has both given empirical evidence and a detailed explanation of language acquisition. It may not be the only possible explanation, but so far it is the best.
4. The mere logical possibility of negative evidence is not enough and, it does not help to concede (as Cowie has) that such evidence is sparse. The aim is to explain how subjects in fact acquire language.
A Chomskyan reaction: Crain and Pietroski

5. Children only overgenerate in morphology (for which the principle of singularity will suffice), but don’t do so in syntax and syntax-dependent semantics (i.e. not lexical semantics). (cf. our word of warning on Pinker)

6. The mistakes that are produced are ones that the Continuity Hypothesis predicts, and not others.

7. The problem is not one of general induction, of mere projection beyond experience, but rather of failing to project or generalize in typical or expected ways.