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THE POVERTY OF THE STIMULUS ARGUMENT ONCE AGAIN

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Abstract

The best-known argument in favor of the innatism of certain mental structures is still the 'Poverty of the Stimulus Argument' (POSA). The general idea of the POSA is that the knowledge which needs to be acquired to develop a certain cognitive capacity vastly exceeds the information available in the environment, so the organism contributes innate information. A review of the literature on linguistic POSA shows that it is not yet fully clear what kind of argument this is and what it really shows. This paper is intended as a diagnosis of the innateness strategy that makes use of the POSA. I will distinguish three types of POSAs and argue, first, that the most appropriate type of POSA, according to certain empirical and theoretical criteria, does not seem to be sufficient for linguistic nativism and, second, that for it to be sufficient, it is usually supplemented with an armchair argument which weakens the empirical nature of the innateness hypothesis.

KEY WORDS: Innatism; Domain-Specificity; Universal Grammar.

Resumen

El argumento más conocido en favor del innatismo de ciertas estructuras mentales sigue siendo el 'Argumento de la Pobreza del Estímulo' (APE). La idea general del APE es que el conocimiento que se requiere para desarrollar una cierta capacidad cognitiva excede en gran medida la información disponible en el entorno, de manera que el organismo contribuye con información innata. Un examen de la literatura del APE lingüístico muestra que aún no está del todo claro qué clase de argumento es y lo que realmente muestra. Mi objetivo en este trabajo es ofrecer un diagnóstico de la estrategia innatista que utiliza el APE. Así, distingo tres tipos de APE y argumento, en primer

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lugar, que la versión más apropiada, según ciertos criterios empíricos y teóricos, no parece ser suficiente para el innatismo lingüístico y, en segundo lugar, que para ser suficiente, suele complementarse con un argumento ‘de sillón’, cuya consecuencia es que convierte al innatismo en una hipótesis empírica debilitada.

PALABRAS CLAVE: Innatismo; Especificidad de dominio; Gramática universal.

1. Introduction

The best-known argument in favor of the innatism of certain mental structures is still the ‘Poverty of the Stimulus Argument’ (henceforth, POSA). Although the POSA was developed in the field of linguistics (most remarkably by Chomsky), it is widely used in many forms in cognitive science, particularly in folk psychology (Leslie 1994), folk physics (Carey & Spelke 1994), mathematical development (Wynn 1992), and folk biology (Keil 1994). The general idea of the POSA is that the knowledge which needs to be acquired to develop a certain cognitive capacity vastly exceeds the information available in the environment—i.e. there is a gap between the poor input and the rich output—so the organism contributes innate information.¹

In Chomsky’s writings, the POSA is a collection of statements and examples that mutually support each other rather than a proper argument (cf. Chomsky 1965, pp. 32-35, p. 58; 1975, pp. 30-33, pp. 153-154; 1980, pp. 34-40, 66, 160, 173). Different formulations of the POSA can be found in his work, which gives rise to the claim that there is no “single” POSA—i.e. a standard, agreed-upon formulation—but rather many types of POSA. In fact, this was the subject of a debate in *The Linguistic Review* 19 (2002). Pullum & Scholz’s target article presented several complaints about the POSA, including the fact that it had an overwhelming presence in the cognitive science literature, and “yet no one attempts to state the argument” (2002, p. 11).

On the other hand, the proponents of the POSA consider its conclusion to be the innate domain-specific principles of the Universal Grammar (henceforth, UG) (Chomsky 1980, p. 66). However, the POSA has been the target of much criticism alleging that it does not show that the information required for developing a certain cognitive capacity is innate and/or that of the UG; instead, it is only domain-specific (Cowie, 1999). In other words, some philosophers claim that the POSA shows that domain-specific information is necessary to acquire a language, but it does

¹ For a development of the concept of ‘the poverty of the stimulus’ see Thomas (2002).

not show that this information cannot be acquired from the environment, nor does it necessarily establish the principles of the UG. Others claim that POSA is intended to show that these domain-specific principles are innate, not that they correspond to the UG (Collins 2003, Fodor 2001). In fact, this was one of the concerns of a debate in *Mind & Language* 16 (2001) on Cowie's polemical *What's Within? Nativism Reconsidered*.

Nowadays, a review of the literature on the linguistic POSA shows that it is not yet fully clear what kind of argument it is and what it really shows. Both of these aspects are closely related: if it is not clear what kind of argument the POSA is, it is even less clear what it is intended to show. My intention here is not to propose a new formulation of the POSA; instead, this paper can be seen as a diagnosis of the innatist strategy that makes use of the POSA.² According to this diagnosis, the empirical motivations of the innateness hypothesis are weakened in the innatist strategy of using the POSA. I will argue that at least three versions of the POSA can be distinguished in the innatism literature: (a) as an inference to the best explanation (Chomsky 1980); (b) as an argument based on underdetermination (Laurence & Margolis 2001; Simpson, Carruthers, Laurence & Stich 2005, p. 6; Crain & Pietroski 2001; Chomsky 1975, pp. 10-11); and (c) as an impossibility-of-acquisition argument (Chomsky 1965, Matthews 2001). The POSA, according to certain empirical and theoretical criteria, does not seem to be either an argument of type (b) or (c). Nevertheless, if the POSA is an argument of type (a), then it is insufficient for nativism, though it would be sufficient for domain-specificity. If this is the case, it would be necessary to supplement (a) with another argument. The innatist strategy usually employs a type (c) argument—or an argument related to (c) in its armchair nature—which goes from domain-specificity to innatism. However, if (c) is used, innatism would follow from an armchair argument, thus weakening its empirical nature. In Section 2, I will address the question of what the POSA is about, identify the three kinds of formulations mentioned above in the literature (2.1), and evaluate what the POSA is supposed to show (2.2). In section 3, I will show how the literature has resorted to armchair arguments so that the POSA leads to innatism, thus turning the innateness claim into a feeble empirical one.

² The POSA is not the only strategy for supporting linguistic innatism. Another strategy, for instance, appeals to the evolutionary character of the faculty of language (see Pinker 1994, 1997). Hence, the outcome of my diagnosis only affects the strategy of the POSA and not the entire linguistic innatist approach.

2. The POSA: What kind of argument it is? What does it show?

The idea that underlies the linguistic POSA is that the knowledge acquired for the development of language wildly exceeds the information available in the linguistic acquisition environment—i.e., there is a gap between the poverty of the input and the richness of the output—so that the organism contributes innate linguistic information/mechanisms. The conclusion of the POSA, as many empiricists and innatists think, seems to support linguistic nativism, i.e. innate domain-specific linguistic information/mechanisms (Crain & Pietroski 2001, Fodor 2001, Laurence & Margolis 2001, Legate & Yang 2002, Pullum & Scholz 2002, Collins 2003).

Among its premises, every POSA usually mentions the poverty of the stimulus and the richness of the output. This is done by pointing out properties of the child's linguistic environment—i.e., the set of sentences to which a child is exposed during language acquisition, namely, the primary linguistic data (henceforth, *pld*)—and properties of the child's accomplishment, i.e., the language of her speech community. Thus, the most frequent properties for the poverty of the *pld* that appear in the literature, in contrast to the properties of the child's accomplishment, are the following: finiteness (the *pld* are finite) vs. productivity (the capacity to understand and producing an unbounded number of sentences); degeneracy (the *pld* contain ungrammatical and incomplete sentences, slips of the tongue, false starts, etc.) vs. reliability (children always succeed at language learning); underdetermination (the *pld* are compatible with infinitely many grammars) vs. convergence (children always arrive at the language of their speech community); idiosyncrasy (children of the same speech community are exposed to different samples of sentences but all arrive at the same 'target language'); positivity (the *pld* contain only positive instances, not negative data, i.e., data that is not an instance of the target language);³ no evidence (absence in the *pld* of positive evidence of certain knowledge of the structure of the language that the child attains, i.e. although the evidence exists, it is not available to the child); and no feedback (children are not rewarded or corrected when they get things right or wrong regarding their language acquisition).⁴

³ Some theorists distinguish between 'negative data', or explicit information that a sentence is not a sentence of the target language, and 'negative evidence', or information that would enable the child to reject a hypothesis as very likely incorrect (Cowie 2008).

⁴ All of these properties are reviewed in Pullum & Scholz (2002).

In order to provide a glimpse of the kind of linguistic information that is needed to develop a first language—information which, according to the innatist, cannot be obtained from the *pld* by the child—I will review one of the best-known instances of the POSA to support knowledge of the UG. This is the structure-dependent rule for the formation of yes-no questions from declarative sentences (Chomsky 1975, pp. 30-35):⁵

(1a) “The man is tall.”

(1b) “Is the man tall?”

(2a) “The man who is tall is in the room.”

[NP The man [who is tall]] *is* in the room.

(2b)* “Is the man who tall is in the room?”

(2c) “Is the man who is tall in the room?”

Although for (1a) the structure-independent principle that states ‘front the first auxiliary verb’ will yield the grammatical sentence (1b), this is not the correct principle for question formation in English given that if it is applied to constructions like (2a), it would yield the incorrect prediction (2b). The correct principle for question formation, which yields the grammatical question (2c), is the structure-dependent principle that states ‘front the auxiliary that follows the subject noun phrase (NP).’ This is a structure-dependent principle because the process for question formation involves parsing the sentence into structurally organized phrases unlike the structure-independent principle, which parses the sentence into a linear order of words. Children who are acquiring a natural language do not make mistakes like (2b), i.e. they attain the correct structure-dependent principle. In order to account for this, the options seem to be either that the child uses the *pld* to reject the wrong principle, or she never entertains the wrong structure-independent principle. Since the *pld* is too impoverished either to provide evidence against the wrong principle (negative evidence) or to extract the required data for the structure-dependent principle (positive data), one must conclude that the principle for structure-dependence is a universal, innate linguistic-specific principle.

It could be argued that in the case of yes/no questions, there seems to be enough available information in the *pld*—that is, that sentences like (2a) and (2c) are part of the children’s input—both to falsify

⁵ One of the reasons for believing that this is probably one of the strongest cases for the POSA is that it is purely syntactic; see Pullum (1996).

the structure-independent principle and to extract the correct one. As many innatists have stated, the claim is not that the relevant evidence in the *pld* is non-existent, but instead that it is impoverished, which means that the existing data is not sufficient (Fodor 2001, Legate & Yang 2002) or robust enough (Crain & Pietroski 2001), or even that it is unnecessary (Matthews 2001) for the child to attain the correct principle. What the child employs in the case of yes/no questions is a principle that constrains the acquisition of her grammar: the Head Movement Constraint, which states that heads of phrases can only move locally (Travis 1984).⁶ Thus, what she has to learn from the *pld* is that non-local movement is prohibited. This is a restriction not only for yes/no question formation. As Crain & Pietroski affirm: "...in English, [the] contraction of *want* and *to* is prohibited in questions where the *Wh*-phrase is interpreted in the subject position of an infinitival clause, and *is*-contraction is prohibited when the *wh*-phrase is interpreted in the position following it; and...referential dependencies are restricted in both declaratives and in strong crossover questions" (p. 166). Thus, what innatists claim by using the POSA is that the *pld* is too impoverished not only to rule out the wrong principle, but also to extract the highly abstract correct principle.

2.1. What kind of argument is the POSA? Best explanation, underdetermination, and impossibility.

A survey of the innatism literature reveals that the POSA has been stated, at least, as an inference to the best explanation (henceforth, IBE), as an argument based on underdetermination, and as an impossibility-of-acquisition argument. Let us consider some of the sources of each kind of argument.

Chomsky was explicit about considering the POSA to be an IBE:

[There is a] vast qualitative difference between the impoverished and unstructured environment, on the one hand, and the highly specific and intricate structures that uniformly develop, on the other. In essence, this is a variant of a classical argument in the theory of knowledge, what we might call "the argument from the poverty of the stimulus"...

Note that the argument is of course nondemonstrative. It is what is

⁶ "Movement of the auxiliary verb in the relative clause...would violate the constraint because such movement would cross the heads of *two* other phrasal projections..." (Crain & Pietroski 2001, p. 164). Recently, it has been argued that this constraint can be derived from more general principles, such as the ECP (Empty Category Principle).

sometimes called an inference to the best explanation, in this case, that what the stimulus lacks is produced by the organism from its inner resources... (1980, pp. 34, 36)

To the best of my knowledge, no one has explicitly stated the structure of the POSA as an IBE. It is useful to think of it as an IBE whose premises include statements about both the poverty of the child's linguistic input and the "highly specific and intricate" competence attained. Thus, the POSA could be formulated as follows:

1. The child (at some age) deploys some specific linguistic rule of grammar.⁷ (Premise about competence)
2. The *pld* is too impoverished for a child to induce that rule. (Premise about the poverty of the stimulus)⁸
3. The same happens with the other rules of grammar. (Generalization of 2)
4. Of all the alternative accounts,⁹ given 2, there are good reasons (i.e. criteria for comparing accounts) to conclude that language acquisition requires [innate] linguistic information [specified in the UG]. (IBE premise)
5. Therefore, it is highly likely that language acquisition requires specific [innate] principles [of the UG].

The brackets in (4) and (5)—and also in the other POSA reconstructions I will present later—indicate that at this point my only intention is to clarify the kind of argument that the POSA might be, not to evaluate what it is supposed to prove (this will be the topic of the next section). Although, as I mentioned above, no one has stated the POSA in this way, this is probably the idea behind Cowie's *a posteriori* POSA (see, for instance, Cowie 1999, pp. 178, 249) and generally, behind the many formulations in the literature that acknowledge its empirical motivations.¹⁰ This way of stating the POSA is thoroughly empirical. It trades in

⁷ Such as the structure-dependent rule for the formation of yes/no questions from declaratives sentences (see the introduction of this section). The term "deploys" is to be understood in a subpersonal way.

⁸ It is impoverished in the sense mentioned in the introduction of this section.

⁹ For example, empiricism or data-driven learning: "learning processes which derive their hypotheses from the data using domain-general processes of induction" (Clark & Lappin 2011, p. 29).

¹⁰ For a recent defense of the POSA, see Berwick *et al.* (2011).

empirical claims about contingent linguistic facts in the form of a non-demonstrative argument.

Nonetheless, the most common way of stating the POSA is as an argument of underdetermination of theory by data (see Chomsky 1975, pp. 10-11; Laurence & Margolis 2001; Crain & Pietroski 2001; Mathews 2001; Legate & Young 2002; Fodor & Crowther 2002; Lasnik & Uriagereka 2002; Simpson, Carruthers, Laurence & Stich 2005). Of course, there is no such thing as an ‘underdetermination argument’ as a ‘type’ of argument in philosophy literature. By this term, I mean an argument which, unlike the IBE and the impossibility-of-acquisition argument, has among its premises (in one or another form) the underdetermination thesis.¹¹ Chomsky himself contributed to this interpretation in passages such as this one:

It is clear that the language each person acquires is a rich and complex construction hopelessly underdetermined by the fragmentary evidence available. Nevertheless, individuals in a speech community have developed essentially the same language. This fact can be explained only on the assumption that these individuals employ highly restrictive principles that guide the construction of grammar. (1975, pp. 10-11)¹²

More recently, passages like the following explicitly assimilate the POSA to an instance of the underdetermination argument:

The general idea behind the Poverty of the Stimulus Argument is clear. It is that the knowledge acquired in language acquisition far outstrips the information that is available in the environment (i.e., the ‘primary linguistic data’); or, as philosophers sometimes put it, the output of the language acquisition process is radically underdetermined by the input. (Laurence & Margolis 2002, p. 221)

The idea behind this way of stating the argument is that if the child achieved X (for instance, the principle of structure dependency), and X is underdetermined by learning experience (the linguistic data are compatible

¹¹ This captures the sense in which Scholz & Pullum (2002, p. 197) describe the view that “linguistic innatism can be supported by arguments based on the premise *that theories are underdetermined by evidence*.”

¹² It can be noted that Chomsky’s formulation of the underdetermination argument, as well as the following reconstruction of the argument, is not a pure one; it requires a couple of IBEs, as I will make clear in §3.1.

with many different principles other than X), then X must be innate (Legate & Young 2002). This underdetermination argument has been developed in many different ways in the literature. The one I present here is based on Chomsky's quote from above, together with Quine's underdetermination thesis:

1. "The language each person acquires is a rich and complex construction" (Chomsky 1975, p. 10). (Richness of the output)
2. This rich and complex construction is underdetermined by the fragmentary evidence available so that "more than one battery of grammatical constructions and vocabulary will probably be capable of generating the same total output of strings" (Quine 1990, p. 5). (Underdetermination thesis)
3. "Nevertheless, individuals in a speech community have developed essentially the same language" (Chomsky 1975, p. 10).
4. Therefore, individuals employ highly restrictive principles [of UG] that guide the construction of grammar.
5. Those highly restrictive principles [of UG] are not the kind of data that are available in the pld. (Poverty of the stimulus)
6. Hence, those principles [of UG] are innate.

A third way of presenting the POSA that I have found in the literature is as a kind of 'impossibility-of-acquisition' argument (henceforth, IA). This kind of argument tries to establish the impossibility in principle of acquiring a language based on the data. The required data is impoverished not just in fact, but also in principle, so that there is no way of enriching the environment since that data is needed to acquire a first language. One way of stating this is, as Fodor puts it, that: "if it is a common ground that a child can't learn a language unless he knows that P [i.e., that grammatical rules are structure dependent], and if, by assumption, knowledge that P is learned rather than innate, then *it just follows* that the child can't learn the language unless he (somehow) learns that P" (2001, p. 124). This leads to an infinite regress, so the only remaining option seems to be that P is innate. If this were not the case, the acquisition of language would be impossible.

Passages can be found in Chomsky's work that approach this idea. For instance:

A theory of linguistic structure that aims for explanatory adequacy incorporates an account of linguistic universals, and it attributes tacit knowledge of these universals to the child. It proposes, then, that the child

approaches the data with the presumption that they are drawn from a language of a certain antecedently well-defined type, his problem being to determine which of the (humanly) possible languages is that of the community in which he is placed. Language learning would be impossible unless this were the case. (1965, p. 27)

Many others have presented the POSA as an IA. This is what Cowie (1999) exhibits as the iterated argument from poverty of stimulus.¹³ Also, Mathews (2001, 2006) states that IA must be described as a kind of POSA insofar as it “trades on the absence of relevant evidence” (Mathews 2006, p. 86).¹⁴ Collins is more explicit when he says that:

The poverty of stimulus considerations tells us, in effect, that the mind/brain must be natively structured in such a way as to be sensitive to concepts of (theory permitting) categorical features, case properties, theta-roles, head projections, etc., for these concepts are not recoverable from data but are necessary (by present theory) to account for the observed structure of linguistic output. (2004, p. 518)

Thus, the POSA as IA can be stated as follows:

1. If a child cannot learn a language unless she is equipped with some domain-specific principles [of UG] that constrain the possible languages to be acquired, then those principles must be acquired in some way.¹⁵
2. Either those principles are acquired from data or they are innate.

¹³ Cowie does not present it strictly as a POSA but as a derivative argument. She distinguishes an *a priori* POSA which is defined very similarly to the way I presented the IA (see also Anthony 2001 and Mathews 2001). Nevertheless, I do not really see the difference between the way Cowie presents the *a priori* POSA and what she calls the iterated argument from poverty of stimulus (1999, pp. 204-205). Most of the time, she presents the *a priori* POSA as what is referred to as ‘the logical problem of language acquisition’ in linguistics literature. This rests on the absence of negative evidence in the *pld* and can be understood as follows: suppose the child is an empiricist learner and negative evidence is not available to her. When she projects a grammar beyond the right set of sentences in the learning situation, there is no way of recovering from the error. Therefore, language acquisition requires (innate) domain-specific mechanisms that constrain the possible hypothesis space. I also see this kind of POSA as a kind of IA.

¹⁴ Although I think it is the other way around: the POSA can be understood as a kind of IA, as I claim directly afterward.

¹⁵ Another way of stating this premise is not to allude to domain specificity, and

3. The principles cannot be acquired from data since they are needed in order to interpret the data.
4. Either the child must acquire principles* in order to acquire the principles in question, which leads to a regress ad infinitum, or the principles are innate.
5. Therefore, the domain-specific principles [of UG] required for language acquisition are innate.

Having reviewed the kinds of POSA, I would like to clarify two points. First, I am not saying that these three kinds of arguments exhaust all possible ways of stating the POSA; it is very likely that there are other kinds of arguments for expressing the POSA, but I have not been able to find a treatment of the POSA in the literature that uses other kinds of arguments than those identified above. Second, a genuine question appears: why, in order to clarify the POSA, do we need to think of it as an instance of another kind of argument? Isn't the POSA a kind of argument all on its own, as for instance, an IBE is? This is not an issue that I would like to pursue here, as it touches on a complicated metaphilosophical topic related to the taxonomy of arguments. I would simply like to note, first, that this treatment of 'the POSA as (one of the type of arguments we just saw)' is what can be found in the literature and, second, that I do not think the POSA stands on its own. In order to propose or truly understand any detailed development of its structure, its premises will always include one about 'underdetermination' or the 'best explanation' or the 'impossibility of acquisition'. This makes the POSA a subclass of another kind of argument, such as the ones we have just seen. In any case, I would not stress the direction of the 'subclass relation'. Suffice it to say that there is a strong resemblance between, for instance, an IBE that 'trades on' the poverty of stimulus and the POSA, or an underdetermination argument and its POSA instance, and so on.

In this section, we have seen both the roots of the motivation for identifying three kinds of arguments or ways of presenting the POSA in the literature, and what seems to be a viable structure of each kind of POSA argument. In what follows, I will address what has been considered in the literature to be the POSA's conclusion.

instead to add a premise that rules out the possibility of acquiring those principles from non-linguistic data.

2.2. What does the POSA show? Domain-specificity, Innatism and Universal Grammar

So far, I have stated three kinds of the POSA that make use of the adjective 'innate' regarding 'knowledge' or 'representational content'. However, the question as to whether Chomsky's innatism is about knowledge (i.e., propositional attitudes; Fodor 2001) or computational mechanisms (Cowie 2001, Collins 2004, Skidelsky 2013) is a matter of dispute. For my purposes here, I assume that Chomskyan innatism is not about anything related to propositional attitudes, but rather about a computational mechanism that computes over linguistic representations, some of which—besides the mechanism—are said to be innate: namely the UG principles and parameters (Chomsky 2000).¹⁶ We have already seen an example of a universal principle; that is to say, that every grammatical operation is structure-dependent. There are said to be about a dozen parameters, such as the Null Subject Parameter, whose setting determines whether a tensed clause must have an overt subject noun phrase, as in French, or must not, as in Spanish (Baker 2001).

The initial state of this computational mechanism is given by the UG principles and parameters. The I-language is the stable state attained by the acquisition process, which mainly consists of the setting, given the linguistic experience, of the (probably binary) parameter values. Different combinations of parameter settings bring about different possible human I-languages. The UG principles are said to be shared by all possible human languages and to act as restrictions to acquiring a natural language. Generative linguists hold that without such restrictions, the learning task would be impossible in the sense that the child would have to rule out many incorrect principles in order to acquire the correct ones. This claim is shared outside the generative field, as well. Empiricists also agree on the existence of mechanisms, predispositions, biases, etc., that

¹⁶ Within the Chomskyan naturalistic project, there is no epistemic relation between the individual and the contents of the I-language (or competence or the target grammar) in the way traditional epistemology understands the knowledge relationship. In this sense, I agree with Stone and Davies when they claim that: "There is no answer proffered to questions about the epistemological nature of the relationship between a person and an I-language. In naturalistic theories about language there is no such question to be answered, just as there is no question to be answered in the theory of visual perception about the epistemological relationship between a person and the principles that capture the workings of the visual system" (2002, p. 281). For a similar view, see Collins (2004, 2007).

are at work in the language learning process. Nonetheless, unlike nativists, empiricists reject that those restrictions consist of ‘representational information’ that is domain-specific, and/or innate, and/or those of the UG.

According to the way that the different kinds of POSA were stated, they were intended to show the innatism of the principles (and parameters) of the UG from premises about the poverty of the *pld* in comparison to the highly complex mental state attained, i.e. that of the I-language. This was supposed to be POSA’s aim prior to the criticism raised by Cowie (1999), who explicitly differentiated between domain specificity (henceforth, DS), innatism (henceforth, I),¹⁷ and UG as different possibilities of the POSA’s conclusion. Cowie claims that even though the POSA was intended to show the (I) of the UG principles, it only shows DS (‘Enlightened Empiricism’, Cowie 2001) or the innatism of domain-specific principles (‘Weak Nativism’, Cowie 1999), but in no way shows that those principles are those of the UG.

To claim that the POSA shows DS amounts to saying that acquiring a language requires specific principles of the linguistic domain that constrain the possible hypothesis about the target language. DS is opposed to the claim that the principles required might be general, i.e. principles—such as principles of induction—that can be used for acquiring many other cognitive structures besides linguistic ones. To claim that the POSA shows (I) is to assert that the principles that constrain the language acquisition process are innate vs. learned. Distinctly, an account of innatism is required to be clear about the meaning of something as ‘innate’. For my purposes here, there is no need to endorse any particular view; any meaning of ‘innate’ will do.¹⁸ DS and (I) are logically independent claims that can be applied to mental structures in general, such as information, states, mechanisms, *inter alia*. For instance, a cognitive capacity can be explained by appealing to domain-general innate

¹⁷ Although it is clear by the context when ‘I’ refers to the abbreviation of ‘innatism’ or to the first-person pronoun, I will use parentheses for the former.

¹⁸ As Scholz & Pullum (2002, p. 191) affirm: “It is clear that there is no single notion of innate linguistic knowledge advocated by generativists”. I also agree with their claim that “It matters what is alleged to be impoverished, and what is alleged to be innate... What is required to show that something is biologically determined, for example, will not necessarily show that the same thing is unlearned or *a priori*”. Nevertheless, I believe that whatever notion of “innatism” generativists use, it should reflect the fact that language is not acquired by inductive or statistical learning or “any account which assigns a fundamental role to segmentation, categorization, analogy, and generalization” (Chomsky 1975, cited in Lewis & Elman 2002, p. 1).

information, i.e. innate information that can figure in the explanation of other capacities besides the one at issue. Or, otherwise, it can be explained by postulating domain specific information—in the sense that there are differentiated processes and/or information that apply to the particular sphere of problems of that capacity—that can be learned. Since our interest is the linguistic capacity, we are talking about linguistic information, mechanisms, etc. In this sense, DS is not about the specificity of whatever linguistic structure is innate, but rather the specificity of the linguistic structure that is postulated to explain the linguistic capacity, independent of the innateness or not of this structure. Finally, to claim that the POSA shows the existence of an UG is to affirm that the principles that constrain language acquisition are those specified by UG theory.

DS neither directly implies (I) nor UG since it is possible to defend the view that domain-specific principles are required together with the view that those principles are learned (and hence, are not innate) and/or they are not those of UG. The same goes for the combination of DS and (I) related to UG. The implied inverse relationships are, however, somewhat complicated. Although it is clear that UG implies (I) and DS—since UG is comprised of domain-specific innate principles—the implied relationship between (I) and DS is not clear. As stated, (I) and DS are, in general, logically independent claims: that is, to claim that there are innate principles that constrain language acquisition does not imply that those principles are domain-specific (or vice versa). Nonetheless, in the innatism debate, DS is part of what the innatist defends (Cowie 1999). Thus, although DS is not committed to (I), linguistic (I) seems to include DS, since what is said to be innate are the domain-specific principles required for language acquisition.

It seems natural to think that the POSA was intended to show UG nativism. First, there is an exegetical reason. Chomsky's writings as well as his POSA examples (such as the one seen in §2.1) reflect this. Also, it is explicitly stated in passages like the following: "The argument from poverty of the stimulus leaves us no reasonable alternative but to suppose that these properties [those of the grammars] are somehow determined in universal grammar, as part of the genotype" (1980, pp. 66). Second, there is a pragmatic reason. Many nativists (for example, Crain & Pietroski 2001) as well as empiricists (for instance, Lewis & Elman 2001) either defend or question, respectively, this conclusion as 'the' POSA conclusion. Third, there is a 'reasonable' reason. It is difficult to understand the POSA if UG nativism is not meant to be its conclusion. What empirical validity would the POSA have without explicitly mentioning examples of particular UG

principles (or parameters)? The POSA, as one can see from Chomsky's quote above and the quotations in §2.1, is meant to be an empirical (or non-demonstrative) argument. He not only always claims that linguistics is an empirical enterprise, but also states that the specific hypothesis about what is innate—that is, the UG—has to be considered on empirical grounds (Chomsky 1991). In order to evaluate the soundness of the POSA, specific principles must be tested. That is, the POSA concerns particular features of grammar—such as the principle of structure dependency or the Head Movement Constraint—for which, it is claimed, the *pld* does not provide sufficient grounds for extrapolation to grammars that contain them. Therefore, what is at stake are the specific UG principles (and parameters).

Nevertheless, other empiricists as well as innatists interpret the conclusion to be the innateness of a “mental mechanism with specific linguistic content” (Pullum & Scholz 2002, p. 12), “domain-specific linguistic knowledge” (Scholz & Pullum 2002, p. 187), or “domain specific information” (Fodor 2001, p. 107) without an explicit mention of the UG. Finally, anti-UG authors like Cowie (2001) and nativists like Matthews (2001) have advocated on dissimilar grounds that the POSA only proves DS; it does not prove that the information required for acquiring a language cannot be learned from the *pld*, nor can it show that this information is that of the UG principles. One of Cowie's main reasons is that the *pld* is not as impoverished as innatists claim for the child to induce the domain-specific information required for language acquisition. Matthews claims that it is a mistake to think that the POSA tries to show that knowledge of UG is innate. Instead, the POSA is intended to show that “learners must come to the learning task with certain antecedent knowledge” (2001, p. 220), that is, that the POSA goes from the *pld* to DS. The argument for linguistic innatism, according to Matthews, involves more steps, namely, a second step that goes from DS to (I), showing that this domain-specific knowledge cannot be learned, and hence is innate, and a third step that goes from (I) to UG, showing that the UG is the adequate characterization of this innate domain-specific knowledge.

I am inclined to believe that while Cowie is correct in considering that the POSA does not show the innateness of the domain-specific principles of the UG—although I believe this is the intended conclusion of POSA—Matthews' strategy is correct in adding more steps to the path from *pld* to linguistic innatism. This innatist strategy, nevertheless, depends heavily on the kind of argument that is added. As I will argue in §3.3, the kind of argument employed in the literature is not one which would keep innatism as a fully empirical hypothesis.

3. What kind of argument POSA is and what it shows

Based on what seem to be viable formulations of the three kinds of argument that are employed in the literature to propose the POSA, we will see that, according to certain empirical and theoretical criteria, the POSA is based neither on underdetermination nor on an IA argument. Nevertheless, if the POSA is an IBE, then it will be insufficient for nativism, though it will be sufficient for domain specificity. If this is the case, it would be necessary to supplement the IBE of the poverty of stimulus with an argument such as the IA or of a similar type—i.e. an argument related to IA in its armchair character—which will allow one to go from domain specificity to innatism. However, if such an argument is necessary, then innatism will follow from an armchair argument, which does not seem to do justice to the empirical pretensions of supporters of the innateness hypothesis. These claims can be stated as follows:

1. If the standard presentation of the POSA can be described as an IBE or an argument based on underdetermination or an IA argument, the POSA seems to be neither an argument based on underdetermination nor an IA argument.
2. If the POSA is an IBE, it does not show (I) but rather (DS).
3. To conclude (I), an argument like the IA (or one related to it in its armchair character) is required.
4. But, if such an argument is employed, then (I) follows from an armchair argument.
5. Therefore, the innateness hypothesis does not seem to be a thoroughly empirical one.

In the next subsections, I will try to defend this argument by addressing each premise separately.

3.1. *The POSA as an inference to the best explanation*

As we have seen in §2.1, the most common way to put forward the POSA is as a kind of underdetermination-of-theory-by-evidence argument. This, however, does not seem to do justice either to the empirical motivations or to the Chomskyan underlying linguistic theory behind the particular POSA's examples. Moreover, beyond these reasons, which I will develop below, even rigorous empiricists like Scholz and Pullum (2002) reject this way of understanding the POSA. This reflects that the

argument based on underdetermination seems not to be the proper way of stating the POSA, at least in the sense that part of the criteria to evaluate a proper formulation is whether both parties of the controversy reach an agreement on the kind of argument the POSA is, or, at least, for what matters here, on the kind of argument it is not.

Let us recall what seems to be the structure of the POSA as an underdetermination argument:

1. "The language each person acquires is a rich and complex construction" (Chomsky 1975, p. 10).
2. This rich and complex construction is underdetermined by the fragmentary evidence available so that "more than one battery of grammatical constructions and vocabulary will probably be capable of generating the same total output of strings" (Quine 1990, p. 5).
3. Nevertheless, individuals in a speech community have developed essentially the same language" (Chomsky 1975, p. 10).
4. Therefore, individuals employ highly restrictive principles [of UG] that guide the construction of grammar.
5. Those highly restrictive principles [of UG] are not the kind of data that are available in the *pld*.
6. Hence, those principles [of UG] are innate.

There are several reasons for thinking that this is not a suitable way of formulating the POSA. First, the thesis of underdetermination affirms that "any given finite body of evidence is compatible with indefinitely many mutually contrary theories" (Pullum & Scholz 2002, p. 197; this is the thesis of 'deductive underdetermination'). If this is true, it affects any theory. As Chomsky (1986, p. 13, n. 5) states, there is nothing special about language that affects it in a particular way beyond the normal underdetermination of empirical theories by evidence. If language is affected in the same way as any empirical theory, then underdetermination alone cannot be an argument for innatism. If it were, we would have to be innatists about everything for which there is a learning theory.¹⁹ The 'narrow' underdetermination argument whose conclusion is (4) does not establish (I). Only the truth of the additional premise (5) would make the path to innatism reasonable. Yet in that case, the underdetermination thesis would not play any role at all. Even if

¹⁹ This particular point has already been put forward by Cowie (1999).

premise (2) is removed and the premises are rearranged, the argument still seems to make its way towards (I) as a kind of IBE. It is only due to the premise about the poverty of the stimulus (also, the premise on the richness of the attained competence) that (I) might follow. In this sense, it does not matter whether linguistic competence is underdetermined by the *pld* in the defined sense, but rather that the *pld* is impoverished to extract the principles in question.

Second, many innatists construct the POSA as establishing innatism from the underdetermination of grammars by input samples in conjunction with general principles of induction (see, in particular, Fodor & Crowther 2002). This is what Scholz & Pullum (2002) call ‘ampliative underdetermination.’ Thus, the POSA would show that given the underdetermination by input samples plus general-purpose inductive learning mechanisms, it follows that highly domain-specific innate information is needed to bridge the gap between linguistic input and highly specific linguistic competence. However, in many of his writings Chomsky stresses the idea that it makes no sense to think of language acquisition as the generation and testing of hypotheses because this is not a case of inductive learning: language acquisition is something that happens to the child.²⁰ This latter idea underlies the POSA. Thus, if language acquisition is not a case of inductive learning, it does not appear to be a good strategy to postulate the POSA based on inductive underdetermination. Thus, the POSA based on inductive underdetermination and on deductive underdetermination is not an argument for innatism.

Third, underdetermination, at least in Quine’s formulation, assumes that there is no single ‘correct’ theory, while Chomskyan linguistic innatism assumes that there is one correct theory, namely, UG. If the underdetermination thesis were true, then there would be no single theory that could be deduced from evidence since the evidence would not rule out theories that are incompatible with each other but are compatible with the evidence. Thus, the underdetermination thesis entails that there is no single theory that can be deduced from evidence. As such, it would be odd to use a POSA based on underdetermination to try to validate the only correct theory—i.e., UG—that the POSA is supposed to defend.

²⁰ The APE’s examples, such as the formation of yes/no questions presented in §2, are based on the idea of generating and testing hypotheses, but only to show the futility of thinking of linguistic acquisition in those terms. This strategy later led to the triggering model.

Fourth, there is a reason related to the intensional character of the I-language. Underdetermination occurs when theories are thought of as extensional entities. However, the linguistic competence or I-language is not an object defined in extensional terms (unlike the E-language), but rather in intensional terms.²¹ It is described as an ‘intensional function’ in the sense that the properties to which the I-language mechanism is sensitive become clear only under the description of the mechanism’s function as one which computes from lexical choices (inputs) to structural descriptions (outputs). Thus, the I-language is a mechanism that generates structural descriptions specified under certain intensional descriptions. This is not similar to a specification of its function in extensional terms, for which it would not matter which descriptions are used. In that regard, the extensional description does not say anything about the internal properties of the mechanism (Chomsky 2000, p. 70; Collins 2004). Thus, Chomsky affirms:

Note again that there is no reason to suppose that the I-language “weakly generates” some set of well-formed expressions, so that it would make sense to speak of I-languages (“grammars”) as “extensionally equivalent” or not in Quine’s terms; even if this concept is found to have some sense or significance, now unknown, there is no reason to suppose that formal properties of this set would be of any interest for the study of language structure... (2000, p. 200, n. 28)

The underdetermination thesis regarding language affirms that ‘extensionally equivalent’ theories would be compatible with the evidence. The equivalence of grammars can be understood as weak or strong. While grammars are ‘weakly equivalent’ when they generate the same set of sentences, they are ‘strongly equivalent’ when, in addition, they generate the same set of structural descriptions (Chomsky 1975, 1980). Quine’s linguistic underdetermination thesis, cited in premise (2), is about ‘weak equivalence’ or, as Quine (1972) expresses it, ‘extensionally equivalent’; this is reflected by the fact that what is at stake is “the same total output of strings” (Quine 1990, p. 5). This form of equivalence applies

²¹ Unlike the I-language, which is internalized (a mental structure in the brain), individual, and intensional, the E-language, which Chomsky rejects as an object of study because he does not believe it exists, is ‘externalized’ and ‘extensional’; it is the “set of expressions given privileged status in some manner that has always been obscure” (Chomsky 1991, p. 9).

to E-languages, objects in which Chomsky is not interested. The POSA is not about E-language, but instead about I-language or competence. That is why there is one correct (represented) grammar for each natural language. So, one can hardly use a thesis based on this conception of language to support the highly innate, specialized principles for acquiring an I-language.

Finally, as is already stated in the first reason, premise (4) does not seem to follow from (1)-(3) without an IBE.²² Likewise, conclusion (6) clearly does not follow from premises (1)-(5). The only charitable way to understand the argument is to take (5) to present an explanatory challenge that can only be met by accepting (6). The explanatory challenge consists of the fact that there is a gap between the complexity of language and the underdetermination of the fragmentary evidence. Appealing merely to the latter leaves the former unexplained, unless we accept innate UG. In addition, premise (2) can easily be rephrased in such a way as to use the notion of impoverishment (instead of underdetermination): the *pld* are impoverished in comparison to the acquired rule. In this context, “underdetermination” can be interpreted as one aspect of “impoverishment”. In this case, what would seem to distinguish different versions of IBE has to do with different ways of assessing impoverishment. In this sense, the POSA as an underdetermination argument always ends up being an instance of an IBE.²³

In a way, the POSA based on underdetermination makes use of—or heavily rests on—a logical possibility, e.g. the infinite set of grammars that can generate a set of infinite expressions (an E-language). The POSA based on the IA argument also heavily rests on logical reasons, this time, a logical impossibility. The argument, as reconstructed in §2.1, is the following:

1. If a child cannot learn a language unless she is equipped with some domain-specific principles [of UG] that constrain the possible languages to be acquired, then those principles must be acquired in some way.
2. Either those principles are acquired from data or they are innate.
3. The principles cannot be acquired from data since they are needed in order to interpret the data.

²² I owe these remarks to Catherine Wearing.

²³ Thanks to anonymous referees for pointing out these considerations.

4. Either the child must acquire principles* in order to acquire the principles in question, which leads to a regress *ad infinitum*, or the principles are innate.
5. Therefore, the domain-specific principles [of UG] required for language acquisition are innate.

The argument establishes impossibility in principle based on logical reasons. The argument's bottom line is that the child cannot acquire a language unless she knows that P (or has some domain-specific concepts). However, she cannot acquire P from the data because she needs it in order to account for the data. Therefore, it follows that P is innate. If this were not the case, language acquisition would be impossible. This argument trades in logical impossibility. IA can also be reconstructed as a transcendental argument where P is the necessary condition for acquiring a language (an I-language).²⁴ In this case, the necessary condition might be conceptual or metaphysical. Notice that in neither of the cases (logical impossibility and conceptual or metaphysical condition), the basis for defending innatism is empirical in the sense that it is a contingent truth about our cognitive architecture, which is held in virtue of natural laws. Since the POSA is intended as an empirical argument for innatism, I do not think this is the appropriate way to state it.

So far, I have given negative reasons for preferring to see the POSA as an IBE, that is, reasons for rejecting the other two options. However, the same reasons are satisfied by the POSA as an IBE. Thus, I believe that the most adequate way to respect both the empirical motivations and the theoretical reasons related to Chomskyan linguistic theory for innatism, which underlies the POSA, is to understand it as an IBE.²⁵

3.2. *The POSA as an IBE shows only domain-specificity*

As presented in §2.2, the POSA as an IBE takes the following form:

1. The child (at some age) deploys some specific linguistic rule of grammar.
2. The *pld* is too impoverished for a child to induce that rule.

²⁴ Anthony (2001) treats IA as a transcendental argument (although she holds that it does not qualify as the POSA because she identifies the POSA with the "empirical POSA").

²⁵ I am not saying that the POSA has to be a single argument of a single type, but that regarding the criteria of respecting the empirical motivations and Chomskyan theory, the most adequate way to understand the POSA, among the types identified here, is as an IBE.

3. The same happens with the other rules of grammar. (Generalization of 2)
4. Of all the alternative accounts, given 2, there are good reasons (i.e. criteria for comparing accounts) to conclude that language acquisition requires [innate] linguistic information [specified in the UG].
5. Therefore, it is highly likely that language acquisition requires specific [innate] principles [of the UG].

This argument, unlike the other types of arguments discussed, is thoroughly empirical. It trades in empirical data and probabilities and maintains the empirical nature of the innateness hypothesis in the sense that it gives it a justification or defense based on a non-demonstrative (or non-conceptual, non-metaphysical, or non-logical) connection between the premises and the conclusion. In spite of the fact that, in this sense, it is the most adequate way to express the POSA, it hardly proves (I). Both nativists (such as Matthews 2001, 2006) and anti-nativists (such as Cowie 1999) have claimed that the POSA does not prove (I), but rather DS. The same occurs with this version of the POSA. As we saw in the example of the structure-dependent principle in §2.1, it seems that the child never entertains the principle that states ‘front the first auxiliary verb’; otherwise she would make false predictions. Anyone who denies that children are equipped with domain-specific information, that is, anyone who holds that language is acquired merely through general-purpose learning mechanisms, will also make incorrect predictions about linguistic development. Thus, children must possess linguistic information that will constrain the acquisition of the target grammar.

However, the fact that domain-specific information is required in order to get the target grammar right does not suffice to show that this information is innate. Recall that DS and (I) are logically independent claims so that, in principle, to argue in favor of one does not imply support for the other. Specifically, as we have seen in §2.2, DS is not committed to (I). Furthermore, the fact that the best available theory is a package containing the three claims—DS, (I), and UG—is not reason enough to accept it all together. It is an empirical possibility that the relevant linguistic principles which constrain language acquisition might be learned through experience, in which case, of course, Chomskyan linguistic nativism would not be the best available theory. What the IBE does, in the case that it is viable, is to exclude some particular empiricist explanation (i.e., some explanation that affirms that the principles are

learned by ways Y or Z). However, it does not rule out, due to the actual nature of the IBE, all possible empiricist explanations (if it did, it would no longer be a non-demonstrative argument). Moreover, if one could make an IBE for each available empiricist explanation (something like a conjunction of several IBEs), this would show that such explanations do not work, but would not show that the innateness hypothesis is correct. Thus, from the fact that the principles cannot be learned by ways Y or Z, it does not follow that they are innate (they could be learned by way Q).

3.3. *The POSA supplemented with an armchair argument for innatism*

As I have mentioned in §2.2, some innatists, like Matthews (2001, 2006), believe that the argument for linguistic innatism involves more steps. Matthews identifies three: one that goes from the *pld* to DS; a second step that goes from DS to (I), which shows that this domain-specific knowledge cannot be learned, and hence is innate; and a third step that goes from (I) to UG, which shows that the UG is the adequate characterization of this innate domain-specific knowledge. He agrees that the POSA only shows DS and argues that Chomskyan nativists, even Chomsky himself, have focused on the first step because this is the one that empiricists mostly resist, the reason being that this is the crucial step for linguistic nativism. I believe Matthews is correct on this point. Moreover, once domain-specific information is admitted, not only does (I) come into play, but also UG. Let us see, first, why domain-specific information also comes along with UG, and then why accepting DS gets us to accept (I).

Once domain-specific information is admitted, I do not think it can be said that the POSA does not show this information to be what is specified in the UG. As we have already seen in §2, the POSA examples are very specific about the detailed linguistic information that is required. To test a POSA example empirically is to test the linguistic-specific information needed to acquire an I-language according to this example. That is, the POSA concerns particular features of grammar—such as the structure-dependent principle or the Head Movement Constraint—for which, it is claimed, the *pld* does not provide enough basis for extrapolation to grammars that contain them. Therefore, those specific UG principles (and parameters) are those that are at stake, those that are supposed to be at work in language acquisition, and also those that are subject to empirical testing.

On the other hand, once domain-specific information (specified in UG) is established as necessary to acquire a language, as Laurence &

Margolis affirm: “a version of the Iterated Argument is virtually unavoidable” (2001, p. 260). I think this is the same as Mathews’s idea, mentioned above, about DS being the crucial step towards (I). If the specific information X is needed in order to acquire an I-language, acquiring X is an impossible task while it is needed in order to acquire an I-language. And, as we have already seen, either X is innate or something else, e.g. X*, is required. This case leads us to an *ad infinitum* regress. This is exactly the structure of the IA. Thus, (I) follows from logical reasons.

In any case, beyond the plausibility of tying DS to UG, the kind of argument that makes (I) unavoidable is the one we have already seen as an IA. This argument is very similar to an armchair argument in the sense that once domain-specific information is admitted, one does not really have to do much empirical research in order to establish the innateness of that domain-specific information. The argument offers a disjunction, where one of the disjuncts—i.e. the one which holds that the domain-specific principles can be extracted from data—is eliminated in favor of the innatism of the domain-specific information, based almost exclusively on logical or armchair reasons, as we saw in §3.1.

One could object that IA is empirically grounded in what does and does not appear in the *pdl*, and that therefore it is based on an empirical claim, namely that these linguistic categories are absent in the data, and hence cannot be learned from the data.²⁶ Nonetheless, the empirical nature of a hypothesis, when it is defended by arguments, is not only based on the fact that its premises are empirical—in the sense of having content that may be empirically tested—but also in that the link between the premises and the conclusion is not purely conceptual/logical. Otherwise, the claim of innatism would not be a contingent truth about our cognitive architecture in virtue of natural laws. Many transcendental arguments have empirical premises and, nevertheless, they establish a conceptual/logical/metaphysical necessity. In the same way, some arguments—such as the IA argument—proposed in cognitive science in favor of hypotheses that are expected to be wholly empirical seem to be based on logical/conceptual relations, leading to a justification of those hypotheses that seems to have an *a priori* more than an empirical nature. Thus, it seems that if a hypothesis is justified with armchair arguments, its empirical character is undermined.

²⁶ Thanks to an anonymous referee for pointing this out.

3.4. The innateness hypothesis as an armchair claim

It is not necessary that the step from DS to (I) be filled by a kind of IA argument. One can also think of an argument heavily based on methodological reasons. Matthews (2001, 2006) proposes another argument that clearly does not qualify as a POSA, but instead is a parsimony argument together with Chomskyan methodological naturalism. It can be stated as follows: there are no viable proposals on how domain-specific knowledge is acquired; in the absence of such proposals, it is reasonable to conclude based on parsimony that such universal traits are innate. Otherwise, this would amount to assuming that the development of cognitive structures should be treated differently than that of physical ones. Therefore, it is reasonable to conclude that domain-specific knowledge is innate. At first glance, one might say that this parsimony argument seems to be empirical. After all, the first premise claims something about the current state of the linguistic discipline. Nonetheless, at second glance, one might think that the argument rests heavily on methodological assumptions. This is enough to cast doubt on its genuine empirical pretensions. It seems that innatism, in this case, follows mostly from a methodological naturalistic claim, plus a demonstrative connection between premises and conclusion.

In short, the innateness claim follows either from demonstrative arguments that trade in logical impossibilities or arguments that presuppose strong methodological assumptions. Either way, the innateness hypothesis seems to lose its predominantly empirical motivation and nature. Of course, I—along with everyone else who follows the generative linguistic approach—believe that linguistics and psychology are empirical sciences and that any claim about the innateness of a linguistic structure in the mind/brain has to be empirically tested. I am merely pointing out that one strategy for defending the innateness hypothesis that makes use of the POSA in the innateness literature turns it, ultimately, into an armchair argument, thus weakening its empirical nature.

4. Conclusions

In this paper, I distinguished three ways of stating the POSA in the innateness literature: as an IBE, as an argument based on underdetermination, and as an IA. The POSA is stated as an IBE when its premises include one about the best (or only) available explanation.

The POSA is formulated as an argument based on underdetermination when its premises include the thesis of underdetermination. Finally, the POSA is stated as an IA when it includes a premise of impossibility. I attempted to show that the most adequate way to understand the POSA is as an IBE. The reasons are both empirical and theoretical. On the one hand, it seems that the ‘poverty-of-stimulus’ IBE respects the empirical motivations for linguistic innatism. On the other hand, the POSA as an IBE seems to respect the underlying theoretical assumptions of Chomskyan linguistic nativism. Nonetheless, an IBE does not suffice to establish (I), but only DS. Thus, it should be supplemented with another argument. The problem is that the arguments proposed in the literature turn the innateness hypothesis into what seems to be a feeble empirical claim, when considered optimistically, or an armchair piece of knowledge, when considered pessimistically.

References

- Anthony, L. (2001), “Empty Heads”, *Mind & Language*, 16 (2), pp. 193-214.
- Baker, M. (2001), *The Atoms of Language*, New York, Basic Books.
- Berwick, R., Pietroski, P., Yankama, B., Chomsky, N. (2011), “Poverty of the Stimulus Revisited”, *Cognitive Science*, 35, pp. 1207-1242.
- Carey, S. and Spelke, E. (1994), “Domain Specific Knowledge and Conceptual Change” in Hirschfeld, L. and Gelman, S. (eds.), *Mapping the Mind: Domain Specificity in Cognition and Culture*, New York, Cambridge University Press, pp. 169-200.
- Chomsky, N. (1965), *Aspects of the Theory of Syntax*, Cambridge, The MIT Press.
- Chomsky, N. (1975), *Reflections on Language*, New York, Pantheon Books.
- Chomsky, N. (1980), *Rules and Representations*, New York, Columbia University Press.
- Chomsky, N. (1986), *Knowledge of Language*, New York, Praeger.
- Chomsky, N. (1991), “Linguistics and Adjacent Fields: A Personal View” in Kasher, A. (ed.), *The Chomskyan Turn*, Oxford, Basil Blackwell.
- Chomsky, N. (2000), *New Horizons in the Study of Language and Mind*, Cambridge, Cambridge University Press.
- Clark, A. and Lappin, S. (2001), *Linguistic Nativism and the Poverty of the Stimulus*, London, Wiley-Blackwell.
- Collins, J. (2003), “Cowie on the Poverty of Stimulus,” *Synthese*, 136, pp. 159-190.
- Collins, J. (2004), “Faculty Disputes”, *Mind & Language*, 19, pp. 503-533.

- Collins, J. (2007), "Linguistic Competence without Knowledge", *Philosophy Compass*, 2 (6), pp. 880-895.
- Cowie, F. (1999), *What's Within? Nativism Reconsidered*, Oxford, Oxford University Press.
- Cowie, F. (2001), "On Cussing in Church: In Defense of What's Within?" *Mind & Language*, 16 (2), pp. 231-245.
- Cowie, F. (2008), "Innateness and Language", *The Stanford Encyclopedia of Philosophy*, Zalta, E. N. (ed.), URL = <http://plato.stanford.edu/entries/innateness-language/>
- Crain, S. and Pietroski, P. (2001), "Nature, Nurture, and Universal Grammar", *Linguistics and Philosophy*, 24, pp. 139-186.
- Fodor, J. (2001), "Doing Without What Within: Fiona Cowie's Critique of Nativism", *Mind*, 110, pp. 99-148.
- Fodor, J. and Crowther, C. (2002), "Understanding Stimulus Poverty Arguments", *The Linguistic Review*, 19, pp. 105-145.
- Keil, F. (1994), "The Birth and Nurturance of Concepts by Domains: The Origins of Concepts of Living Things" in Hirschfeld, L. and Gelman, S. (eds.), *Mapping the Mind: Domain Specificity in Cognition and Culture*, New York, Cambridge University Press.
- Lasnik, H. and Uriagereka, J. (2002), "On the Poverty of the Challenge", *The Linguistic Review*, 19, pp. 147-150.
- Laurence, S. and Margolis, E. (2001), "The Poverty of the Stimulus Argument", *British Journal of Philosophy of Science*, 52, pp. 217-276.
- Legate, J. and Yang, C. (2002), "Empirical Re-assessment of Stimulus Poverty Arguments", *The Linguistic Review*, 19, pp. 151-162.
- Leslie, A. (1994), "Pretending and Believing: Issues in the Theory of ToMM," *Cognition*, 50, pp. 211-238.
- Lewis, J. and Elman, J. (2001), "Learnability and the Statistical Structure of Language: Poverty of Stimulus Arguments Revisited" in *Proceedings of the 26th annual Boston University Conference on Language Development*, Somerville, Cascadilla Press, pp. 359-370.
- Matthews, R. (2001), "Cowie's Anti-Nativism", *Mind & Language*, 16 (2), pp. 215-230.
- Matthews, R. (2006), "The Case for Linguistic Nativism" in Stainton, R. (ed.), *Contemporary Debates in Cognitive Science*, London, Blackwell, pp. 81-97.
- Pinker, S. (1994), *The Language Instinct*, New York, William Morrow.
- Pinker, S. (1997), "Evolutionary Biology and the Evolution of Language", in Gopnik, M. (ed.), *The Inheritance and Innateness of Grammars*, New York, Oxford University Press, pp. 181-208.

- Pullum, G. (1996), "Learnability, Hyperlearning, and the Poverty of the Stimulus", in Johnson, J., Juge, M. L. and Moxley, J. L. (eds.), *Proceedings of the 22nd Annual Meeting: General Session and Parasession on the Role of Learnability in Grammatical Theory*, Berkeley, Berkeley Linguistics Society, pp. 498-513.
- Pullum, G. and Scholz, B. (2002), "Empirical Assessment of Stimulus Poverty Arguments", *The Linguistic Review*, 19, pp. 9-50.
- Quine, W. (1972), "Methodological Reflections on Current Linguistic Theory" in Davidson, D. and Harman, G. (eds.), *Semantics of Natural Language*, Dordrecht, Reidle, pp. 442-454.
- Quine, W. (1990), "Three Indeterminacies" in Barrett, R. and Gibson, R. (eds.), *Perspectives on Quine*, Oxford, Blackwell, pp. 1-16.
- Scholz, B. and Pullum, G. (2002), "Searching for Arguments to Support Linguistic Nativism", *The Linguistic Review*, 19, pp. 185-223.
- Simpson, T., Carruthers, P., Laurence, S. and Stich, S. (2005), "Introduction: Nativism Past and Present" in Carruthers, P., Laurence, S. and Stich, S. (eds.), *The Innate Mind: Structure and Contents*, New York, Oxford University Press.
- Skidelsky, L. (2013), "Faculty of Language, Functional Models, and Mechanisms", *Journal of Cognitive Science*, 14 (2), pp. 111-149.
- Stone, T., and Davies, M. (2002), "Chomsky Amongst the Philosophers", *Mind & Language*, 17, pp. 276-289.
- Thomas, M. (2002), "Development of the Concept of 'the Poverty of the Stimulus'", *The Linguistic Review*, 19, pp. 51-71.
- Travis, L. (1984), *Parameters and Effects of Word Order Variation*, Unpublished Doctoral Dissertation, MIT.
- Wynn, K. (1992), "Addition and Substraction by Human Infants", *Nature*, 358, pp. 749-750.

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