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The p-model of data and evidence in linguistics and its application to object-scientific problems*

1 A general overview of the book

After the research monograph *Data and Evidence in Linguistics* (Kertész & Rákosi 2012), which was centred around the elaboration of the p-model of plausible argumentation, the present book focuses on the possibilities for applying the p-model in various fields of linguistics. The p-model has been designed not only to reflect on linguistic theorising from a metatheoretical point of view, but also to find a satisfactory metatheoretical solution to the methodological problem on data and evidence in linguistic theorising (the two aims are inherently related to each other). While the most important question concerning the first aim is how linguistic theorising could be made more effective, the second aim poses various problems, including the following: what types of data should be used in different linguistic theories, what subtypes of data can be regarded as evidence, and how different linguistic theories should treat the usable types of data/ evidence. The present volume, which collects eight case studies, shows how the p-model can be applied to different linguistic theories making the linguists' problem-solving practice more effective, with special attention

devoted to the role of linguistic data and evidence in the process of linguistic theorising.

2 The state of the art, the key features of the p-model, and the structure of the book

Introduction: The state of the art and the structure of the book, by András Kertész & Csilla Rákosi

In the introductory chapter, the editors delineate the methodological prejudices of mainstream linguistics and sum up the problems the debate on linguistic data and evidence poses: "(P) (a) What kind of metascientific framework is capable of providing a novel and comprehensive model of linguistic theorising?" and "(b) How can the concepts of 'linguistic data' and 'linguistic evidence' be defined in such a way that the shortcomings of the current literature can be avoided?" (15). According to the editors, the solution to (P) (a) and (b) can be expected from an "argumentation theoretic model of linguistic theorising" (15). This model has been elaborated (Kertész & Rákosi 2012), and called the p-model. The rejection of "a series of methodological prejudices" (5) paved the way for a series of innovations, the most important of which are the following: 1. the p-model claims that all kinds of linguistic data are uncertain. 2. Uncertainty is explicated by the p-model as plausibility. 3. Linguistic theorising is regarded by the p-model as a dynamic process of plausible argumentation which is cyclic and prismatic in its nature. 4. The p-model regards inconsistency as the natural property of linguistic theorising, and offers several techniques to handle it. 5. The p-model argues for the pluralism of linguistic theorising, which means that there may be more possible solutions to a certain p-problem.

As far as the structure of the book is concerned, the longest part of the volume, consisting of six object-theoretical applications of the p-model (Part II), is framed by the introduction of the methodological framework of the book (Part I) and two metatheoretical applications of the p-model (Part III). After the Table of Contents and the editors’ introductory chapter on the current state of the art in linguistic research and the structure of the book, in Part I an overview is offered on the most important concepts and claims of the p-model. The editors illustrate these concepts and claims using examples from the object-theoretical chapters. At the end of the first part, the possible
metatheoretical solution obtained to solve the problem of data/evidence in linguistics is summarised. Part I is followed by six object-scientific contributions from various fields of linguistics (lexical pragmatics, historical linguistics, pragmatics, generative linguistics, and formal semantics) (Part II). After the object-scientific contributions, in Part III we can see two examples of the application of the p-model in metatheoretical research, namely, András Kertész and Csilla Rákosi’s chapter comparing thought experiments and real experiments, and Csilla Rákosi’s study on inconsistency resolution in Optimality Theory. The volume ends with the editors’ concluding chapter and the Index.

3 The methodological framework of the book

The p-model of data and evidence in linguistics, by András Kertész & Csilla Rákosi

As was noted in the first section, the p-model has been designed to reflect on linguistic theorising from a metatheoretical point of view, and to find a satisfactory metatheoretical solution to the methodological problem of data and evidence in linguistic theorising. Concerning these aims, one of its most important innovations is the recognition that linguistic data are most of the time uncertain. The p-model accounts for this uncertainty with the help of the notion of plausibility and plausible statements. It defines a datum as a statement with a positive plausibility value (strength of acceptability) originating from a direct source (e.g. corpus, linguistic intuition, experiment). Introducing the notion of plausibility to linguistic theorising, the p-model makes problem solving more effective. It regards problem solving in linguistic theorising as a systematic process called plausible argumentation, and treats and uses uncertain statements by placing them in the argumentation process systematically as follows. Data function as starting points for the argumentation process: plausibility values, which they receive directly from reliable sources, enter the argumentation process through them. However, they supply the theory with plausibility values not only in a direct, but also in an indirect way, when functioning as the premises of plausible inferences. Plausible inferences are therefore indirect sources of linguistic theorising, because a hypothesis obtained as the conclusion of such an inference receives a plausibility value indirectly, from the datum
serving as a premise of the inference. The p-model's concept of evidence grasps this relationship between such hypotheses and data. Evidence in this sense is not an objective, given subcategory of data; any datum can function as evidence for a hypothesis in a given argumentation process if it is a premise of a plausible inference making the hypothesis plausible. The notion of evidence in the model is thus interpreted relative to a given hypothesis of a given theory, consequently, it plays a crucial role in the evaluation and comparison of the plausibility of rival hypotheses (see the next paragraph). The main body of a given argumentation process is constituted by chains of plausible inferences.

If we regard data and evidence as being uncertain, it can easily happen that both a statement and its negation are plausible to a certain extent at some stage of the argumentation process. The p-model considers such inconsistencies the natural property of linguistic theorising, and call them p-inconsistencies. It can also happen that a statement is neither plausible nor implausible, i.e. is of neutral plausibility on the basis of some source; this problem is called p-incompleteness in the p-model. In order to treat p-inconsistency and p-incompleteness (i.e. p-problems), the model offers effective problem-solving strategies, all of which involve the retrospective re-evaluation of the p-context, i.e. the previously accepted hypotheses, data, data sources, evidence, methodological norms, etc. from different perspectives. From this it follows that the argumentation process and in this way linguistic theory formation according to the p-model is not linear, but cyclic and prismatic, always leaving open the possibility of more alternative solutions and further argumentation cycles.

The case studies constituting the rest of the volume show how the achievements of the p-model and metatheoretical thinking in itself increases the effectiveness of linguistic theorising.

4 Object-theoretical applications of the p-model

The plausibility of approaches to syntactic alternation of Hungarian verbs, by Károly Bibok

Bibok's contribution on syntactically alternating verb classes is the first example from the volume showing how to treat rival hypotheses with the help of the p-model explicated above. In order to account for syntactic alternation, i.e. verbs occurring in two types of syntactic ar-
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Agument structures, several approaches have been proposed. According to the lexical rule approach, syntactic alternation results from a lexical rule which operates on the semantic representation of a lexical item and creates another, new lexical item. The constructional approach, however, suggests that constructions are independent of particular verbs in the sense that the meaning of the verb is fused with the meaning of the construction, but the participant roles of the verb play an important role in syntactic alternations: the verb occurs in two types of syntactic argument structures if its participant roles are compatible with the argument roles of two constructions.

Adopting the Contrastive Strategy of problem-solving, Bibok compares the rival hypotheses of the two approaches in relation to Hungarian locative alternation verbs. He finds that while both the lexical and constructional approaches face lexical exceptions, both lexical and constructional factors have a role to play in syntactic alternations. For this reason, he starts a new argumentation cycle and turns to the Combinative Strategy. That is, he builds the rivaling theories into the p-context as "methodologies reconciled and supplemented with each other" (64). The lexical-constructional approach proposes a lexically underspecified, general verb meaning serving as a basis for both constructional meanings. Finally, presenting evidence for the lexical-constructional account and against the other two approaches, Bibok shows that the former approach is more plausible than the latter two are when considered separately.

Methods and argumentation in historical linguistics: A case study, by Katalin Nagy C.

Katalin Nagy C.’s case study shows another treatment of p-inconsistency when applying the p-model to the methods of historical linguistics. She examines the historical development of "anar 'go' + infinitive" in Catalan. The construction originally had a purposive meaning (be in motion with the aim of doing something’) (79), then went through a complicated development including a semantic change. In modern Catalan, the periphrasis "anar (auxiliary) + infinitive" is used to express a perfective past meaning. As far as the morphology of the construction is concerned, while the auxiliary in current Catalan is conjugated in the present, in medieval texts it shows a present-past alternation. The two versions documented are "anar 'go/auxiliary' conjugated in perfective past + infinitive" and "anar 'go/auxiliary' conjugated in present + infinitive". The research question
of Nagy C.'s investigation is which of the two variants should be considered the antecedent of the perfective past of modern Catalan. Her starting p-context formed by three approaches is informationally overdetermined: some statements and their negations are simultaneously plausible in the context. According to Colon's and Detges's "historical present account" (Colon 1978a, b; Detges 2004), the historical present usage of the construction with the present auxiliary pushed the preterite version into the background, that is, it is the periphrasis with the present auxiliary which should be considered the antecedent. In contrast, Juge's "morphological account" (Juge 2006) posits the semantic change earlier in time. He claims that first the past meaning of the whole construction had become consolidated, then, due to the formal identity of the present and preterite first and second plural indicatives, the construction with a preterite auxiliary was reinterpreted by language users as one with a present auxiliary.

In order to resolve the p-inconsistency, Nagy C. first extends the p-context and reconstructs the latent background assumptions relating to what the three analyses mean by the term historical present. This is a crucial step in the p-model, as the plausibility of a hypothesis is "influenced by the plausibility of the latent background assumptions of the inferences which support them as indirect sources" (90). In accordance with the methodology of the p-model, Nagy C. coordinates and modifies the extended p-context, then compares the rival solutions. During these phases of the argumentation cycle, she finds that Juge's explanation is considerably better and deserves a higher plausibility value than the other two proposals. Unlike Bibok, who eliminates the p-inconsistency in his p-context by applying the Combinative Strategy, Nagy C. decides in favour of the Exclusive Strategy, which means that she rejects the "historical present account" in favour of the "morphological account" concerning the historical development of "anar + infinitive" in Catalan.

**Hungarian verbs of natural phenomena with explicit and implicit subject arguments: Their use and occurrence in the light of data, by Enikő Németh T.**

The next object-theoretical application, which discusses the occurrence of Hungarian verbs of natural phenomena with or without an explicit subject argument, shows how to treat data from various data sources, such as linguistic analyses, introspection, intuition, written corpora (dictionaries, grammars, works of fiction), or spoken dis-
courses, and in this way how to decide between rival hypotheses or theories. Since the previous literature on the issue does not always offer statements which can be interpreted as data within the framework of the p-model, Németh T.’s contribution also represents how to reconstruct data on the basis of the information content and reliability of their direct sources. While *Magyar grammatika* (Hungarian Grammar) (Keszler 2000) and Komlósy’s lexical-functional approach (Komlósy 1994, 2001) consider the Hungarian verbs of natural phenomena to be subjectless, Tóth’s generative syntactic analysis (Tóth 2001) assumes a quasi-argumental subject. However, there are questions which these explanations cannot answer, or in some cases we do not even meet any explanations. Consequently, the starting p-context is not only p-inconsistent, but p-incomplete as well. In order to resolve these p-problems, Németh T. extends the p-context with a new spectrum of data from various sources (*Magyar Nemzeti Szövegtár* (Hungarian National Corpus), her own intuition, spoken discourses). On the basis of these new data, she assigns a high plausibility value to the hypothesis that "Hungarian verbs of natural phenomena are not subjectless" (115). Since this means that the extended and coordinated p-context is also p-problematic, Németh T. starts a new argumentation cycle. This time she extends the p-context with her previous results concerning implicit arguments in Hungarian. She assumes that the verbs of natural phenomena have a subject argument position in their lexical-semantic representation, the filling of which, however, is strictly constrained by selection restrictions. This account is more plausible than the previous ones, and can therefore be regarded as the resolution (the least p-problematic solution) to the problem in the starting p-context.

**The development of a taxonomy of verbal disagreements in the light of the p-model**, by Helga Vanda Koczogh

Koczogh's contribution, which provides the metatheoretical steps taken to find a new taxonomy for describing Hungarian disagreement, also highlights the cyclic, retrospective, and prismatic nature of the plausible argumentation process. Koczogh defines verbal disagreement as "a situated activity whose function is to express an opinion (or belief) the propositional content or illocutionary force of which is – or is intended to be – partly or fully inconsistent with that of a prior (non-verbal) utterance" (134). Taking into consideration the starting p-context, she points out that most of the research so far car-
ried out on disagreement has concentrated mainly on its linguistic manifestation and ignored its functional spectrum. For this reason, she intends to identify the functional categories of disagreement in her Hungarian corpus. In the first argumentation cycle, she proposes a category system for disagreement which is based on the four earlier models; however, as it clarifies the relationship between linguistic markers and functional categories and also takes into account data from the author's own linguistic intuition and spoken discourses, it is more plausible than the earlier solutions in the starting p-context. Nevertheless, since there are occurrences of disagreement in the corpus which even this new framework cannot account for, Koczogh finds that the extended p-context is still informationally underdetermined. Therefore, she starts a new argumentation cycle, extends the p-context further with the intuitions of other native speakers, and realizes that the majority of disagreements in the corpus are multifunctional, that is to say, two or even three functions can be assigned to them.

In order to treat these examples, she distinguishes between disagreement functions (strategies) and pragmatic force modifiers, i.e. modification devices which strengthen or soften the illocutionary force of the utterance. The new taxonomy is in this way more complete than the previous one or than the models constituting the starting p-context. Since it provides the best description of Hungarian disagreement, it can be regarded as the resolution of the starting p-problem.

**A case of disagreement: On plural reduplicating particles in Hungarian, by György Rákosi**

Rákosi’s chapter examines an interesting Hungarian linguistic phenomenon, namely, the behaviour of the reduplicating particle verb construction (RPVC) when the particle has a plural oblique associate. In the pertinent generative literature on Hungarian there is considerable disagreement about whether or not the agreeing RPVC, i.e. the plural form of the particle is grammatical in these cases (e.g. Peti (Pete) rá-juk (onto-3PL) nézett (looked) a (the) lány-ok-ra. (girl-PL-onto) ‘Pete looked at the girls.’ (180)). With the help of the p-model, Rákosi finds a possible resolution for this p-inconsistency. First, he shows an important latent background assumption of the pertinent literature: it tacitly assumes that the agreeing and the non-agreeing RPVCs are instances of the same construction type. While É. Kiss
(2002) analyses the particle as a full pronoun, i.e. the head of an appositive construction in both the agreeing and the non-agreeing RPVCs, others treat the particle as something else (e.g. a verbal prefix (É. Kiss 1998)). Rákosi manages to maintain the two contradictory analyses simultaneously: he shows that the agreeing plural particle patterns up with pronouns in various constructions, while the non-agreeing particle does not. This suggests that while the particle is a pronoun in the agreeing RPVC, it is not a pronoun in the non-agreeing RPVC. Since the former construction is more complex, it is marked, and native speakers may often find it ungrammatical. Rákosi argues that native speakers can be divided into two groups based on whether or not they tend to accept the pronominal use of the particle. The main issue of the chapter in this way is not only whether or not the marked construction is grammatical; it also offers an explanation as to why the grammaticality judgements are so diverse towards it. Rákosi’s line of reasoning thus arrives at a paraconsistent solution, which tolerates inconsistency by applying two contradictory statements for different domains of data, that is, the two inconsistent p-contexts are systematically separated by the Combinative Strategy of the p-model. This illustrates the prismatic nature of the plausible argumentation process.

**A plausibility-based model of shifted indexicals, by Zoltán Vecsey**

While the central object theoretical question of Vecsey’s chapter is whether attitude operators (e.g. say) can modify the meaning of indexicals, its central metatheoretical question is what the role of linguistic data is in linguistic theorising. The theoretical debate the empirical findings of which Vecsey introduces concerns the crosslinguistic applicability of Kaplan’s Fixity Thesis: “the denotation or propositional contribution of an indexical expression is fixed solely by the relevant parameters of its actual context of occurrence, and cannot be influenced by any sentential operators” (203). As there are reliable sources which make plausible both the statements ‘(FT) is crosslinguistically applicable’ and ‘(FT) is crosslinguistically not applicable’, the theoretical situation shows informational overdetermination, i.e. we can see p-inconsistency again. Vecsey’s proposal for the resolution of this conflict, however, is somewhat new in the volume. He does not deny that there exist context-shifting languages, but he claims that this context-shift is not operator controlled but its possible occurrence
can be explained by assuming a pragmatic component. The possibility of shifting depends on these "explanatory components" which "belong to the primary pragmatic processes" taking place "before the first step of the semantic interpretation of indexicals begins" (214). The author lists several extralinguistic factors which trigger these pragmatic processes: conventionalised norms of reasoning, shared background knowledge, or communicative intentions. Vecsey thus treats the p-inconsistency by introducing a new theory-element into the p-context.

5 Metatheoretical applications of the p-model

Thought experiments and real experiments as converging data sources in pragmatics, by András Kertész & Csilla Rákosi

One of the most important achievements of the object theoretical applications introduced above is that they highlight the necessity of the integration of several data sources and data types in linguistics. Kertész & Rákosi in the present chapter establish the methodology of such an integration through the examination of the relationship between thought experiments and real experiments in pragmatics. They do this by reconstructing the argumentation structure of a thought and a real experimental report, namely, Searle's (1969) famous thought experiment on Kennst du das Land, wo die Zitronen blühen? and the real experiments in Holtgraves & Ashley (2001), respectively. They find that the argumentation processes of the two reports show a strong analogy. In both cases, the directly emerging pieces of information are connected with higher level hypotheses by a chain of plausible inferences. The hypotheses obtained in this way, however, are gradually re-evaluated and reformulated resulting in a cyclic argumentation process. This basic analogy between the argumentation structures of thought and real experimental reports suggests three kinds of continuity between thought and real experiments, according to the authors. The first one is that the results of thought experiments can form a part of the starting p-contexts of real experiments. That is, real experiments can use premises the plausibility of which originates from thought experiments. This means that the result of a thought experiment can contribute to the plausibility of the result of a real experiment. For example, the starting p-context of Holtgraves & Ashley (2001) includes the reformulated result of
Searle (1969): "[...] utterances have both a propositional content and an illocutionary force (the speech act performed with the utterance)" (Holtgraves & Ashley 2001: 83). As all four experiments conducted by Holtgraves & Ashley (2001) provided evidence for the presence and recognition of the illocutionary force of utterances, they increased the plausibility of the result of Searle's thought experiment. Therefore, with the help of real experiments thought experiments can be re-evaluated retrospectively, and the plausibility of their results may be modified. This is the second kind of continuity between thought experiments and real experiments. Finally, in the case of real experiments, in order to test whether the experimental process proposed will provide relevant and reliable data, experimenters have to go through the experimental procedure in their mind before it takes place in reality. In this way, the experimental design of a real experiment can be regarded as "a special kind of thought experiment" (256). This is the third kind of continuity between thought and real experiments. Although the authors also emphasise that there are important differences between the two kinds of experiment, i.e. they have different strengths and weaknesses, the analysis of Kertész & Rákosi comes to the general conclusion that "the conscious integration of real and thought experiments as data sources within some research may considerably enhance the reliability of pragmatic hypotheses" (221).

Data and the resolution of inconsistency in Optimality Theory, by Csilla Rákosi

The other study proposing a possible metatheoretical application of the p-model analyses the most frequent methods of inconsistency treatment in Optimality Theory. After identifying the basic types of inconsistency in OT, Rákosi reconstructs Kager's (1999) resolution strategies with the help of the p-model. The four basic types of inconsistency in OT identified by Rákosi are the following: 1. "Satisfying a constraint leads to conflicts with another constraint" (274). 2. "A constraint ranking fails to rule out certain incorrect output forms belonging to the given input form" (275). 3. "A constraint ranking fails to produce the correct output form in the case of input forms having a certain characteristic" (276). 4. "Constraint hierarchies contradict each other within a language" (277). As can easily be seen, p-inconsistencies usually concern the ranking of the different constraints in OT. Rákosi shows that the hypotheses about these rankings are usu-
ally tested by the application of thought experiments in OT. These thought experiments identify the conflicts, then divide them into fatal and tolerable ones. OT typically treats fatal conflicts with the Contrastive and Exclusive problem-solving strategies, i.e. the earlier accepted constraint hierarchy which is in conflict with "linguistic data" is given up and replaced by a modified version. Tolerable conflicts, however, are treated with the Combinative Strategy (moving the optimal forms into the surface representation while constraints are part of the evaluation process). Rákosi highlights the shortcomings of these generally applied strategies in OT. On the one hand, she suggests that the extension of a given constraint set may not be possible if "there is no appropriate constraint among the set of universal constraints" to fulfil the necessary task (306). On the other hand, as there is an infinite number of input forms in every language, the applicability of a given constraint ranking hypothesis can never be tested completely. These findings make Rákosi conclude that OT does not differ much from the "standard" generative theories with respect to its inconsistency treatment.

6 Evaluation of the book

The Evidential Basis of Linguistic Argumentation provides a comprehensive picture of the application possibilities of the p-model. The case studies illustrate how the p-model works in practice in various fields of linguistics. Moreover, as the editors indicate in the concluding chapter, in each case study there are certain key features of the p-model (see Section 2) which are illuminated especially well. For example, Enikő Németh T.'s and Helga Vanda Koczogh's contribution best exemplifies the significance of relying on as many data types as possible, which may considerably increase the reliability of hypotheses. The methodology of such an integration is established in Kertész and Rákosi's metatheoretical chapter in which they examine the relationship between thought experiments and real experiments in pragmatics. The importance of the reconstruction of the data structure of previous theories as well as their latent background assumptions is best highlighted by Enikő Németh T., Katalin Nagy C., and György Rákosi. Vecsey's case study best illustrates how the directly emerging pieces of information can be connected with higher level hypotheses by a chain of plausible inferences.
As far as inconsistency treatment and problem-solving techniques are concerned, Németh T. shows very well what a researcher can do when the p-context is informationally over- and underdetermined at the same time, in other words, when both p-inconsistency and p-incompleteness are present at a certain stage of the argumentation process. In order to treat p-inconsistency, while Németh T. and Nagy C. decide in favour of the Exclusive Strategy after the Contras
cutive Strategy, Bibok and Rákosi apply the Combinative Strategy displaying the cyclic, retrospective, and prismatic nature of the plausible argumentation process. Csilla Rákosi analyses inconsistency resolution in a metatheoretical application of the p-model, focusing on the tech-
niques of inconsistency treatment in Optimality Theory. She finds that while fatal conflicts are typically solved with the Contrastive and Exclusive Strategies, tolerable conflicts are treated with the Combinative Strategy in OT.

The chapters of the volume are structured in a didactic manner (see Section 2) guiding the reader step by step. That is to say, by the time the reader gets to the case studies, s/he has already become familiar with the p-model, and can follow the argumentation processes of the object-theoretical applications more easily. This is also helped by the references to the most important concepts of the p-model within the texts of the case studies, which illustrate not only the relevant sections in Part I but also in the volume Data and Evidence in Linguistics (Kertész & Rákosi 2012). Since the metatheoretical chapters in Part III apply the p-model on a more abstract level than the object-theoretical contributions, they require an even deeper familiarity with the model, which the reader can easily achieve by going through the six object-theoretical chapters. In this way, we can say that the book has a progressive structure. The five key features syn-
thesising the main innovations of the p-model frame the volume: they are described in the Introduction and highlighted in the Conclusions.

Since the techniques for problem-solving offered by the p-model and the careful treatment of linguistic data both increase the effectiveness of linguistic theorising, the book is especially useful for working linguists. As the editors emphasise in the concluding chapter, when they are aware of the circumstance that on plausible statements only plausible but not certainly true inferences can be built, linguists become "more open to possible counter-arguments and more critical against the weak points of their own theories" (309). Furthermore, since the present volume is a valuable contribution to
the philosophy of science and argumentation theory as well, like Kertész & Rákosi's previous research monograph, it makes profitable reading for argumentation theorists and philosophers of science as well. Moreover, since knowing the p-model means the reader is able to follow any kind of argumentation process with a critical eye, and the chapters are structured in a didactic manner, The Evidential Basis of Linguistic Argumentation (Kertész & Rákosi 2014) can be effectively used by all readers of scientific literature.

References


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