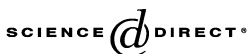




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Inconsistency and plausible reasoning in an analysis of German affricates: A case study in the philosophy of linguistics

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10 Abstract

11 The paper puts forward a metatheoretical approach which is capable of accounting for the emer-
12 gence and resolution of contradictions in linguistic theories. After the main tenets of this approach
13 have been introduced, the authors illustrate them by carrying out a detailed case study on the argu-
14 mentation structure of an analysis of German affricates. In the final section general conclusions are
15 drawn that go beyond the particular case study and reveal hidden aspects of theory construction in
16 linguistics. The main finding is that linguistic theories work in a way fundamentally different both
17 from what the analytical philosophy of science and practicing linguists themselves assume.

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19 *Keywords:* Theory of linguistics; Phonology; Plausible reasoning; Scientific argumentation; Scientific reasoning

21 1. Introduction

22 1.1. Metatheoretical preliminaries

23 In their well-known textbook on the philosophy of language, Devitt and Sterelny
24 describe the relationship between linguistics and metascientific theories as follows:

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25 There is obscurity and controversy not only over the problems for which we need
 26 theories of language but also over the status of the theories themselves. This issue
 27 of status is highly abstract: it requires a theory of theories of language, a ‘meta-the-
 28 ory’. It would be nice to ignore the meta-theory and get on with the theory, but that
 29 is a luxury *we cannot afford*. We think that many mistakes in the theory of language
 30 arise from a *mistaken meta-theory*. Further, we think that these mistakes are often
 31 facilitated by a failure to be explicit about the meta-theory: *once the implicit meta-*
 32 *theory is exposed, it can be seen to be implausible and unsupportable* (Devitt and Ste-
 33 relny, 1999, p. 9; italics added).

34 Each of the linguistic theories that evolved—partly as a result of, and partly as a reac-
 35 tion against the development of generative linguistics—in the second half of the twentieth
 36 century presupposes the existence of an implicit metatheory which it takes for granted and
 37 the background assumptions of which it does not query. Though the pluralism and heter-
 38 ogeneity of theoretical linguistics is well-known and thus the metatheories behind linguis-
 39 tic theories may also be diverse, a significant portion of these metatheories share certain
 40 well-describable common features. These common features correspond to the so-called
 41 ‘standard’ or ‘received view’ of the analytical philosophy of science¹:

42 While the assumption is not always explicit, linguists apparently take for granted the
 43 standard view of the structure, function, and methods for evaluation of explanatory
 44 theories in *empirical science* (Ringen, 1975, p. 3).

45 This approach has not changed a bit in the last decades—for the most part, the implicit
 46 metatheory of generative linguistics and that of the wider domain of current theoretical
 47 linguistics which developed in relation to generative linguistics *consider the above men-*
 48 *tioned standard view as unquestionably valid*.² However, what the sentences quoted from
 49 Devitt and Sterelny’s book suggest is that we need not accept the standard metatheoretical
 50 approach uncritically.

51 As the question of the applicability of the standard view was raised quite sharply but pri-
 52 marily with respect to the empirical status of generative linguistics in the metascientific debates
 53 in the 1970s and the 1980s, in this paper we wish to investigate it from a perspective largely
 54 neglected so far: from the perspective of certain peculiarities of *linguistic argumentation*.

55 As is well-known, within the standard view two criteria for the acceptability of empiri-
 56 cal theories are especially relevant: scientific theories have to employ *valid deductive infer-*
 57 *ences*, and they have to be *logically non-contradictory*. If linguistic theories presuppose the
 58 standard view as their implicit metatheory, then (H1) follows as a consequence:

- 59 (H1) Acceptable linguistic theories
 60 (a) solely employ valid deductive inferences, and
 61 (b) maintain the law of non-contradiction.

¹ See Suppe (1977) for a detailed discussion of the ‘received view’.

² Chomsky (2000) still maintains that linguistic theories should adopt the same criteria which *seem* to apply to scientific theories investigating any other aspect of the natural world. In advocating his recent approach to what he calls ‘naturalism’, he claims: ‘a ‘naturalistic approach’ to the mind investigates mental aspects of the world as we do any others, seeking to construct intelligible explanatory theories, with the hope of eventual integration with the ‘core’ natural sciences.’ (Chomsky, 2000, p. 76).

64
65 We intend to show that (H1) is ‘implausible and unsupportable’ for the reason that the
66 practice of linguistic theorising differs significantly from the norm that (H1) imposes. We
67 intend to argue for the following hypothesis, as against (H1):

- 68 (H2) There exist linguistic theories,
69 (a) the claims of which bear plausible but not deductive inference relations to each
70 other and
71 (b) which violate the law of non-contradiction.
72

73
74
75 At the outset, we briefly need to present those considerations which motivate the oppo-
76 sition just shown between (H1) and (H2).

77 *First:* according to (H1), those linguistic theories which are characterised by (H2)
78 should be considered unacceptable because they do not comply either with the criterion
79 that we are to employ only valid deductive inferences or with that which requires them
80 to obey the law of non-contradiction. At the same time, such a theory can still be ‘success-
81 ful’, ‘productive’, ‘workable’ and, judging by the general reception, may significantly con-
82 tribute to the proper handling of those problems the solution of which it regards as its
83 objective (the expressions in quotation marks are used pre-explicatively).

84 *Second:* a significant number of practising researchers accept hypothesis (H1) while
85 applying non-deductive inferences during the solving of a problem at almost every
86 step—but they do so *without any overt reflection on this fact*. This can mean two things:
87 either they labour under the delusion that—driven by the norms of the standard view—
88 they are employing valid deductive inferences and proceed in a non-contradictory manner,
89 whilst their inferences are in fact not deductive, and possibly contradictory; or they may be
90 suspicious that they are not proceeding according to (H1) but they do so with a guilty con-
91 science. That is: the image that a significantly large group of linguists project of their own
92 work, either with an implicit or an explicit acceptance of (H1), differs substantially from
93 some of the actual practice of their professional activity.

94 *Third:* in view of the complexity of the problems posed by the relation between (H1) and
95 (H2), which could only be captured by rather lengthy metascientific analyses, we do not
96 intend to *prove* (H2) exhaustively but only to demonstrate it through an expediently pre-
97 sented and therefore instructive example. For this reason, this paper centres on a *case*
98 *study* whose only purpose is to support the *implausibility* of (H1) and the *plausibility* of
99 (H2).³

100 1.2. On the case study

101 The case study will deliberately and consciously focus on an approach which is no
102 longer up to date and belongs to the *history of linguistics*, but whose peculiarities make
103 it particularly suitable for our purposes. The case study we chose will investigate Wurzel’s
104 reasoning in his analysis of German affricates (Wurzel, 1981).⁴ So as to avoid misunder-

³ Cf. (3) in Section 4.1.

⁴ We will consider the whole of Wurzel (1981)—which is a particular (somewhat ‘eclectic’) version of generative phonology and a comprehensive approach to the segmental phonology of German—a ‘theory’. Since the notion of ‘theory’ is not relevant for our line of thought, we will not define it. Wurzel’s account of German affricates is an ‘analysis’ of certain data using basic tenets of this theory.

standings, it is useful to call the reader's attention to a couple of relevant considerations which concern both the choice and the nature of this case study at the outset.

First, the object of our investigation will *not* be the phoneme system of German, that is a subsystem of *language*, but particular aspects of phonological *inquiry*. Consequently, the discipline which our study belongs to and whose conventions it obeys is *not* linguistics, but *the philosophy of science*. Therefore, our aim is *not* to find the 'truth' concerning the phoneme system of German by selecting the 'best' phonological theory, but to analyse the argumentational structure of a particular phonological theory.

Second, in accordance with this, the case study is to be interpreted as a kind of *thought experiment* which starts from the reconstruction of certain aspects of an existing linguistic theory and which uses the result of the reconstruction as premises of conclusions concerning the nature of theory formation that *without* this reconstruction could not be drawn (Kertész, 2004a). In other words, we will strive to show two things. On the one hand, the reasoning applied in the theory we examine can be reconstructed with the help of the method we suggest. On the other hand, we will also show that the *conscious* use of the techniques of reasoning thus revealed may—*within* the boundaries of the given theory and *without* changing the historical conditions in which it was originally developed—outline novel and perhaps even more plausible solutions to the problems the theory tackles than those put forward by its proponents.

Third, it is one of the most widely applied methods of the philosophy of science that assumptions concerning the nature of scientific theories are exemplified by carefully chosen *case studies*. Normally, these case studies do not concern current theories, but are taken from the history of science. For example, Imre Lakatos analyses a geometrical problem discussed some 200 years ago in order to support his approach to the philosophy and methodology of mathematics. Sneed, the founder of 'the structuralist view of theories', built his approach on a careful analysis of Newton's theory of particle mechanics. Kuhn illustrated his famous claims that revolutionized the philosophy of science by examples such as phlogiston theory, affinity theory in chemistry or Copernicus' astronomy.⁵ It is no accident that in the philosophy of science very often historical case studies are chosen so as to exemplify certain well-defined issues. We know that Kuhn's *The Structure of Scientific Revolutions* (Kuhn, 1970) led to a new understanding both of the nature of scientific knowledge and the nature of the philosophy of science. One of the main claims of Kuhn's work was that the workability of philosophies of science may be judged by examining to what extent they are capable of accounting for the processes which were witnessed by the *history of science*. That is, the workability of a certain metascientific approach is to be seriously questioned if one can show that it does not capture most of the theories which in a given historical period were considered as 'scientific' and, at least to a certain extent 'acceptable', or at least as a possible alternative worth being disputed.

Fourth, we have further substantial reasons for choosing this very example. Namely, in the seventies and eighties Wurzel's phonology was considered to be successful and

⁵ It is important to emphasize that in the heated discussions which these approaches gave rise to, one particular argument never occurred: namely, that the reason why these authors turned to such old theories is that they were not aware of later developments of the discipline at issue. That is, the fact that, as the object of our analysis, we chose an approach which was put forward about three decades ago must not mean that we have never heard of current approaches to the same issues, that we 'believe' in this theory or that we think it to be 'true'.

145 acknowledged as such,⁶ although it was fiercely disputed as well.⁷ Therefore it provides an
146 excellent opportunity to test whether a theory which in a certain historical period was con-
147 sidered to be successful and workable complies with (H1) or not.

148 Fifth, there is, however, a peculiar factor which makes Wurzel's analysis particularly
149 interesting from the perspective of linguistic argumentation: Wurzel's account is the sev-
150 enth chapter of the academic grammar of the German language edited by Heidolph
151 et al. What the editors set up as the main objective of the volume is a description of the
152 system of language which should communicate not only the *results* of research, but it
153 has to point out the *motives* for the decisions at issue as well and to reveal *possible alter-*
154 *native solutions* so that in obscure cases dogmatic preconceptions can be avoided. Accord-
155 ingly, the authors did not strive to put forward a *resultative* grammar, but rather, a
156 *problem-oriented presentation* of the grammatical regularities of contemporary German
157 (Heidolph et al., 1981, p. 5).⁸ Wurzel, acting all along under this guiding principle, endeav-
158 ours to weigh up the possible arguments and counterarguments as carefully as possible
159 (cf., for example, Wurzel, 1981, p. 912, 937f, 940, etc.) with the aim of finding the best pos-
160 sible alternative—not hiding the fact that sometimes he does not find a solution satisfac-
161 tory in every respect. Accordingly, our task in the present paper is *not* to examine the
162 general, declared methodological assumptions of generative phonology but to reveal the
163 inference patterns *applied in the textual explication of Wurzel's argumentation*. Only in this
164 way can we cast light upon how the practice of linguistic theorising potentially diverges
165 from the declared norms.⁹

166 Finally, Wurzel's approach is relatively simple and is, therefore, well-suited for illustrat-
167 ing issues which turn up in many other—and perhaps 'better' and more 'adequate'—the-
168 ories as well, but in a *more hidden* and *more complicated way*. In particular, both the
169 technique of reasoning he applied and the mistakes he made seem to be *typical* and can
170 be revealed relatively easily and clearly.¹⁰ This facilitates drawing metatheoretical conclu-

⁶ By 'successful' and 'workable' we mean—in full accordance with our approach to plausible reasoning as outlined in Section 2 of the present paper and as already mentioned in Section 1.1—the *heuristic potential* of Wurzel's analysis: namely, its capability of solving the problems it tackles by using its own means and/or its capability of raising new problems which can be captured by the same means or which, alternatively, give rise to approaches going beyond the scope of the theory at issue. By 'acknowledged as such' we mean that in the German literature it has been considered as a major achievement not only in the seventies and eighties but in current works as well. For later evaluations of Wurzel's analysis of German affricates see for example such classical contributions as Luschützky (1992), Prinz and Wiese (1991), Wiese (1996) etc.

⁷ See for example Wiese (1985).

⁸ This might appear as trivial from the point of view of present-day conventions of theory formation in linguistics. But in the seventies it was far from self-evident that a grammar of German should focus on an argumentative presentation of the issues it tackles.

⁹ On an analysis of the same example from other points of view, cf. also Kertész (1993, Chapter 8), which discusses the heuristics of Wurzel's analysis of affricates built on plausible inferences from the perspective of the didactics of phonological problem solving, as well as Kertész (2004a, Chapters 21–26).

¹⁰ That the technique of reasoning Wurzel uses is *typical* can be shown, of course, only by a series of further case studies leading to the same findings which we put forward in this article. The scope of the present paper does not permit such a detailed proof. Nevertheless, in other publications of ours we argued that the same mechanism of plausible reasoning can be revealed in very different linguistic theories such as Chomsky's Government-Binding Theory, Lakoff and Johnson's Cognitive Theory of Metaphor, Bierwisch and Lang's Two-Level Approach to Cognitive Semantics, and Gricean approaches to pragmatics. See Kertész (2004a,b), Kertész and Rákosi (forthcoming-a, forthcoming-b, in preparation).

171 sions whose tenability would be difficult to prove in the case of more refined, more com-
172 plex and less faulty theories.

173 Based on these motivations, we intend to find an answer to the following question with
174 this case study¹¹:

175 (Q) Does Wurzel's analysis of affricates meet the requirements in (H1)?

176 As an answer to this question, we formulate the following *hypothesis*:

177 (H2') It does not, because

178 (a) it is not deductive but *plausible* inference relations that the claims of Wurzel's
179 analysis of affricates bear to each other, and

180 (b) it *violates* the law of non-contradiction.

183

184 The remarkable character of this hypothesis is highlighted especially well by the fact
185 that Wurzel's approach is one of the theories that were rooted in Chomsky and Halle
186 (1968),¹² thus general opinion would naturally embed it in the frame of linguistic theoris-
187 ing that Chomsky outlines in, for example, *Syntactic Structures* and some aspects of which
188 we described in (H1).

189 1.3. On the structure of the paper

190 In accordance with what has been said we will proceed as follows.

191 We provide a brief summary of the basic tenets of our approach to plausible inferences
192 in Section 2. The background knowledge necessary to understand point (a) of hypotheses
193 (H1) and (H2) is summed up in Section 2.1, inasmuch as we survey the relation between
194 deductive and plausible inferences. In Section 2.2, we illustrate point (b) of the two
195 hypotheses referred to above by describing the correlation between inconsistency and
196 the use of plausible inferences. We summarise the results of this survey in Section 2.3.

197 The above mentioned case study is presented in Section 3 by utilising the concepts
198 and the background assumptions of the approach to plausible reasoning which have
199 been introduced. In Sections 3.1–3.4, we reconstruct that system of plausible inferences
200 which leads to a contradiction in Wurzel's analysis, and in Sections 3.5 and 3.6. we take
201 stock of the possible ways of resolving this contradiction. We will show, however, that
202 within Wurzel's system this contradiction is irresolvable and that, accordingly, (H2') is
203 tenable.

204 Finally, we will infer (H2) from the plausibility of (H2') in Section 4. Accordingly, from
205 this fairly special case study, we will draw *general* conclusions which have significance well
206 beyond themselves and characterise fundamental mechanisms of theory-formation in lin-
207 guistics. In this way we wish to undermine certain preconceptions which are widespread in
208 linguistics but which in general remain non-reflected.

¹¹ Wurzel (1981) is a comprehensive approach to the phonology of German which might well be called a 'theory' in whatever sense. Part of this is Wurzel's account of affricates which we will treat as particular analysis carried out within the framework of that theory.

¹² Nevertheless, Wurzel (1981) is not a clear case of the SPE approach. For example, he attributes a substantial role to 'phonemes' and 'variants'.

209 **2. Plausible inferences in scientific argumentation**210 *2.1. Basic notions*

211 Given the constraints determined by the size and the genre of this paper, we are in no
212 position to provide a precise explication of the basic notions; therefore we will consciously
213 use them in a pre-explicative form. Nevertheless, we make the following terminological
214 remarks in advance, which we do not intend to be precise explications but assistance in
215 rendering our train of thought followable and understandable.

216 First, the notions of ‘deductive’, ‘conclusive’, ‘demonstrative’ and ‘logical’ inference are
217 treated as synonyms; we will use the term ‘demonstrative’. Second, we regard the basic
218 concepts and the notational conventions of propositional logic as given, and they are
219 not introduced systematically. Third, the notions of ‘consistency’ and ‘non-contradiction’,
220 and those of ‘inconsistency’ and ‘contradiction’ are also treated as synonyms. Fourth: by
221 ‘probability’ we do not understand mathematical probability but the *degree of plausibility*
222 (on the relationship between the calculus of probability and plausibility, cf. Polya, 1954,
223 109ff). Fifth: by ‘heuristics’ we understand rules (i) the role of which is to survey (in a
224 non-systematic manner) relatively large domains of problems, (ii) which may lead to the
225 solution of a certain problem, but (iii) which do not necessarily yield the solution or the
226 optimal solution of this problem. Sixth: by ‘data’ we understand such assertions that
227 embody the knowledge available to us in a given informational state for the solution of
228 a problem.¹³

229 Presupposing these terminological remarks, in what follows we analyse the role plausi-
230 ble inferences play in scientific argumentation by taking the classical works of George
231 Polya and Nicholas Rescher as our starting point.¹⁴ This does not mean, however, that
232 what we establish is an eclectic union of significantly divergent approaches, as the two
233 author’s analyses are in close connection with each other.¹⁵ What we therefore aim at is
234 the establishment of a coherent metascientific analysis rooted in the classical approaches
235 mentioned.

236 In introducing our methodological framework, we will make extensive use of quota-
237 tions. In this way we want to demonstrate that the views which serve as our starting point
238 for capturing relevant aspects of linguistic argumentation are nothing ‘exotic’, but have
239 been present in the literature for several decades.¹⁶ Nevertheless, we are well aware of
240 the fact that we have made only the first steps towards elaborating the kind of methodol-
241 ogy which we have been after. Clearly, such a methodology will fall and rise with the suc-

¹³ According to this formulation, we call not only those assertions data which describe ‘facts’ or ‘observations’ in whatever sense of these terms, but also every background assumption which we use during the argumentation. On this interpretation of data cf. Rescher (1979, p. 69).

¹⁴ There is a very rich literature on plausible inferences. However, we will restrict the discussion to the classical works of Polya and Rescher, because they put forward the main tenets which later research has been based on. Although Polya’s and Rescher’s ideas were published a couple of decades ago, they are still up to date. This is clearly witnessed by their being evaluated as ‘pioneering’ even in the latest literature. See e.g. Woods et al. (2000, 258).

¹⁵ ‘Polya’s entire analysis of the logic of inductive reasoning can also be accommodated on the present approach.’ (Rescher, 1976, p. 67).

¹⁶ Quotations which serve only to illustrate our claims, will appear in the footnotes. However, those which play a substantial role in our line of thought will be integrated into the main text of this paper.

Table 1

Demonstrative inference (modus tollens)	Plausible inference (reduction)
If <i>A</i> , then <i>B</i> not <i>B</i>	It is certain that if <i>A</i> then <i>B</i> <i>B</i> has become certain
not <i>A</i>	<i>A</i> is more credible

242 cess or failure of carrying out further case studies similar to the one presented in this paper
243 so as to justify, refute or refine our conclusions.

244 (i) *The notion of plausible inference.* The common features of plausible inferences can be
245 summed up in two points as a first approximation:

246 First, they *do not have* the *certainty* of a strict demonstration. Second, they are useful
247 in acquiring essentially *new knowledge*, and even *indispensable* to any not purely
248 mathematical or logical knowledge, to any knowledge concerned with the physical
249 world. We could call the reasoning that underlies this kind of evidence ‘heuristic reason-
250 ing’ or ‘inductive reasoning’ or (if we wish to avoid stretching the meaning of
251 existing terms) ‘*plausible reasoning*’ (Polya, 1948, p. 221f; italics added).

252 The fundamental difference between plausible and demonstrative inferences can be
253 illustrated by Table 1.

254 (ii) *The uncertainty of plausible inferences.* In this example both inferences have one
255 common premise, namely, the first one. The second premise is, however, different. This
256 leads to an essential difference with respect to the conclusions. While with deductive infer-
257 ences the truth of the conclusion follows from the truth of the premises with *certainty*, in
258 the case of plausible inferences the premises merely increase the *credibility* of the
259 conclusion.

260 Consequently, plausible inferences are less reliable by nature than demonstrative infer-
261 ences: they involve the possibility of mistakes, errors and rejectability (Polya, 1948, p. 221;
262 Walton, 2001, p. 159, etc.).¹⁷

263 (iii) *The heuristic function of plausible inferences.* We very often find ourselves in a sit-
264 uation during the solving of a problem that, at a certain point, we have *several* hypotheses
265 (conjectures) at our disposal *which mutually exclude each other*, but every one of which is
266 supported by certain considerations and therefore each may represent a *possible alternative*
267 in view of the amount of information that we possess. Then we *have to decide* between two
268 competing hypotheses, but

¹⁷ ‘The plausible conclusion is comparable to a force which has *direction and magnitude*. This conclusion pushes us in a certain direction: *A* becomes *more credible*. This conclusion has also a certain strength: *A* may become *much more credible* or *just a little more credible*. The conclusion is not fully expressed and is not fully supported by the premises. *The direction is expressed and is implied by the premises, the strength is not*. For any reasonable person, the premises involve that *A* becomes more credible (certainly not less credible) but my friend and I may honestly disagree about the weight of the conclusion, since our temperaments, our backgrounds, and our unstated reasons may be different. Yet the strength of the conclusion matters. If two jurors judge differently the strength of a conclusion, one may be for acquittal and the other against it. If two scientists judge differently the strength of a conclusion, one may be for undertaking a certain experiment and the other against it.’ (Polya, 1954, p. 113f; italics as in the original).

269 [d]eductive logic alone will certainly not decide the issue. Logic merely tells us *that*
 270 the situation is not viable as it stands. It informs us *that* something must be given
 271 up, but does not provide any help in the question of *what*. [...] Plausibility theory
 272 takes us beyond logic and probability: it moves from the realm of *formal* into that
 273 of '*material*' considerations. It seeks to develop the more demanding machinery
 274 needed for making the inevitable choices in such cases of cognitive conflict through
 275 informational overdetermination (Rescher, 1976, p. 2; italics as in the original).

276 Thus plausible inferences are *heuristic tools* with the purpose of bringing us closer to the
 277 solution of a certain problem, inasmuch as they help us form an opinion of which possible
 278 alternative is the most promising on the basis of the information available for us at any
 279 given moment.¹⁸

280 (iv) *The partial basis of plausible inferences*. With demonstrative inferences, the premises
 281 make up a 'complete basis' in the sense that '[i]f we receive some new information that
 282 does not change our belief in the premises, it cannot change our belief in the conclusion'
 283 (Polya, 1948, p. 223). On the other hand, in the case of plausible inferences the premises
 284 make up only a 'partial basis', that is the complete basis has a part which is not expressed
 285 through the premises:

286 [...] the premises constitute only one part of the basis on which the conclusion rests,
 287 the fully expressed, the 'visible' part of the basis; there is an unexpressed, invisible
 288 part, formed by something else, by inarticulate feelings perhaps, or by unstated reasons.
 289 In fact, it can happen that we receive some new information that leaves our
 290 belief in both premises completely intact, but influences the trust we put in *A* in a
 291 way just opposite to that expressed in the conclusion. To find *A* more plausible on
 292 the ground of the premises of our heuristic syllogism is only reasonable. Yet tomorrow
 293 I may find grounds, not interfering at all with these premises, that make *A*
 294 appear less plausible, or even *definitively refute it*. The conclusion may be shaken
 295 and even overturned completely by commotions *in the invisible parts of its foundation*,
 296 although the premises, *the visible part, stand quite firm* (Polya, 1948, p. 223f;
 297 italics added).

298 (v) *The context-dependence of plausible inferences*. Due to the reason already mentioned
 299 in (iv), the conclusions of plausible inferences are context-dependent in a substantial and
 300 non-trivial way. The reason is that the credibility of conclusions cannot be established
 301 'absolutely', but depends significantly on the 'strength' of the premises. How credible a
 302 conclusion is can be judged only relative to the premises in particular and the properties
 303 of the partial basis in general (see e.g. Polya, 1954, 115f; Rescher, 1976, 111ff; Walton,
 304 2001, p. 164).¹⁹

¹⁸ Cf. the quotation in (i) Polya (1948, p. 102; 1954, p. 140) and Walton (2001, p. 164) as illustrations of this tenet. See also Allan's (2003) instructive paper on similar issues with respect to *linguistics*.

¹⁹ At this point, it is essential to draw attention to the problem of assertions of the structure 'if *A*, then *B*'. We know that assertions of this kind cannot be translated as $A \supset B$, i.e. as a conditional (which merely asserts $\sim(A \& \sim B)$), without loss of information. If *A* and *B* are both true, then $A \supset B$ will be true even if there is no content relation between *A* and *B*. With plausible inferences, however, the expression 'if *A*, then *B*' can by no means be rendered by a conditional. Therefore in what follows—as a first approximation—assertions of this type are analysed as *B* being a necessary condition for *A* (*B* cannot be true without *A*), and *A* being a sufficient condition for *B* (each time *A* is true, *B* is also true).

Table 2

Demonstrative	Shaded plausible		Plausible
It is certain that if <i>A</i> , then <i>B</i> <u><i>B</i> false</u> <i>A</i> false	It is certain that if <i>A</i> , then <i>B</i> <u><i>B</i> less credible</u> <i>A</i> less credible	It is certain that if <i>A</i> , then <i>B</i> <u><i>B</i> more credible</u> <i>A</i> somewhat more credible	It is certain that if <i>A</i> , then <i>B</i> <u><i>B</i> true</u> <i>A</i> more credible
<i>modus tollens</i>	<i>shaded modus tollens</i>	<i>shaded reduction</i>	<i>reduction</i>

305 (vi) *Plausible inferences and the informational background*. We said in point (iii) that
 306 plausible inferences are heuristic tools. Problem-solving is, however, nothing else but a
 307 *process* during which we *reconsider* the available information again and again. This means
 308 that changes in the informational background may affect the plausibility of the premises,
 309 which—as a result of the context-dependence of plausible inferences mentioned in the pre-
 310 vious point—may significantly influence the plausibility of the conclusion, too. Plausible
 311 inferences are therefore *dynamic*, since changes in the plausibility of the premises are con-
 312 comitant with changes in the degree of the plausibility of the conclusions: they become
 313 more or less plausible. George Polya assumes that in this process the conclusion of a plau-
 314 sible inference changes *monotonically*, when one of its premises changes monotonically,
 315 and that this change is *continuous* (Polya, 1954, p. 41; Walton, 2001, p. 161). These two
 316 properties lead us to discover a peculiar and very important relation between plausible
 317 and demonstrative inferences:

318 [. . .] our pattern of plausible inference has a ‘limiting form’, which is a pattern of
 319 demonstrative inference. As the premises of the plausible inference ‘tend’ to the cor-
 320 responding premises of the limiting form, the plausible conclusion ‘approaches’ its
 321 extreme limiting strength. Still shorter: there is a continuous transition from the heu-
 322 ristic pattern to a demonstrative pattern (Polya, 1954, p. 42).

323 This can be illustrated by Table 2 (cf. Polya, 1954, p. 26).

324 In the first case, we know that one of the necessary conditions of *A* is not satisfied,
 325 which requires us to conclude that *A* is false. In the second case, we are not certain any
 326 more about the falsity of *B*, therefore we cannot conclude with certainty that *A* is false.
 327 In the third case, we have gained possession of information which supports the satisfaction
 328 of this necessary condition to some extent, even though it does not verify it—this evidently
 329 increases the plausibility of *A*. And finally in the fourth case, we know certainly that one of
 330 the necessary conditions of *A* is true; this, however, is still not enough for us to be able to
 331 consider *A* true as it is possible that *A* has a further condition which is not satisfied.

332 Thus the plausibility of the conclusion is heavily dependent on how plausible the pre-
 333 mises are: there is a strong correlation between the strength of the conclusion and the plau-
 334 sibility of the premises. In the case of the above pattern, this means, for example, that ‘our
 335 confidence in a conjecture is influenced by our confidence in one of its consequences and
 336 varies in the same direction’ (Polya, 1954, p. 25). If, for example, the second premise is
 337 very weak, it obviously does not increase the plausibility of the conclusion significantly,
 338 perhaps not at all, but in any case, it does not argue against it; if, however, it is ‘almost
 339 certain’, the plausibility of the conclusion will be higher. A similar observation can be
 340 made in the case represented in Table 3, too.

Table 3

Demonstrative	Shaded plausible
It is certain that if <i>A</i> , then <i>B</i>	It has become less credible that if <i>A</i> , then <i>B</i>
<u><i>B</i> false</u>	<u><i>B</i> false</u>
<i>A</i> false	<i>A</i> somewhat more credible
<i>modus tollens</i>	<i>shaded modus tollens</i>

341 The two premises of our first inference characterise a situation in which one of the nec-
 342 essary conditions of *A* is not satisfied—therefore *A* is evidently false. We do not know for
 343 sure in the second case whether *B* is a necessary condition of *A* but only suspect that it is
 344 so; the falsity of *B* does not exclude *A* in this case.

345 (vii) *The generality of plausible inferences.* Though George Polya demonstrated plausi-
 346 ble inference and heuristic reasoning through the example of mathematics, he believed
 347 their usage to be desirable and even inevitable in other domains of cognition, too, and
 348 he also found them present in our everyday thinking (Polya, 1954, p. 114). This, however,
 349 does not mean that *their function* is the same in, for example, mathematics or in the
 350 humanities. In mathematics, the role they play is primarily connected to achieving results,
 351 discovering correlations, choosing the axioms of a theory or hitting upon the essential
 352 ideas needed to develop exact proofs. And though we may come across non-demonstrative
 353 inferences in the explication of mathematical theories, too, these can only be used as
 354 abbreviations facilitating understanding (Polya, 1948, 102f). But in the vast majority of
 355 scientific theories—in those natural sciences, humanities and social sciences which declare
 356 themselves empirical—non-demonstrative inferences can not only be the means by which
 357 new hypotheses are *discovered* but they may also *play an important role in evaluating these*
 358 *hypotheses* (for a more detailed discussion on this, cf. Rescher, 1987). This latter statement
 359 obviously applies to linguistics, too.

360 2.2. Inconsistency and plausible inference

361 As we know, the law of non-contradiction is one of the pillars of rationality in science
 362 according to the standard view of the philosophy of science.²⁰ Inconsistent theories are
 363 unacceptable because they are pregnant with destructive logical and epistemological con-
 364 sequences. It is accepted wisdom that (a) anything can be deduced from a logical contra-
 365 diction, (b) contradictions cannot be true, (c) one cannot rationally believe in a
 366 contradiction, (d) if contradictions were acceptable, human beings could not be rationally
 367 criticised for their opinions and (e) if contradictions were accepted, nothing could be
 368 denied (cf. Priest, 1998). At the same time, we know that '[w]hen we look closely at scien-
 369 tific practice, including the construction of models and theories, we not infrequently find
 370 toleration of inconsistency *even within individual theories*, at least in their nascent phases,

²⁰ See for example: 'For it can easily be shown that if one were to accept contradictions, then one would have to give up any kind of scientific activity: *it would mean a complete breakdown of science.* This can be shown by proving that *if two contradictory statements are admitted, any statement whatever must be admitted; for from a couple of contradictory statements any statement whatever can be validly inferred.*' (Popper, 1962, p. 313; italics as in the original and added).

371 or as long as they continue to promise interesting results' (Nickles, 2002, p. 20; emphasis
372 added).

373 To resolve the thus outlined tension between scientific practice and the ideal view of sci-
374 ence, the need to handle contradictions in logic and in the philosophy of science has grown
375 more and more definite in the last two or three decades. The development of the so-called
376 'paraconsistent logics' has played an important role in this shift of emphasis, the most
377 important feature of which is that they are capable of reconstructing contradictory systems
378 in a non-contradictory manner (an easily intelligible overview of the operative principles of
379 paraconsistent logics is provided by e.g.: Rescher and Brandom, 1980; Priest, 1998; Fehér,
380 1990a,b). Parallel with the development of paraconsistent logics, but partially as a result of
381 processes independent of it, the focus of interest has also changed for philosophers of sci-
382 ence: *the processes of theory development and problem-solving* have also become interesting
383 research topics beside the investigation of the logical structure of theories (cf. Nickles,
384 1980). During this process, the realisation that several scientific theories are either incon-
385 sistent or are irreconcilable with accepted views or with views believed to be accepted, has
386 received increased attention. This shift of emphasis has raised delicate questions, such as:
387 How can an inconsistent theory avoid turning into logical chaos? Is it rational to accept an
388 inconsistent theory? Can inconsistent theories be true? (For more on this issue, cf. Meheus,
389 2002).²¹

390 A possible way of answering the questions just mentioned is to recognise that there
391 exists a strong correlation between the contradictions arising in scientific theories and
392 the mechanism of the use of plausible inferences. Drawing upon Rescher's classical inves-
393 tigation, we can summarise the correlation between inconsistency and plausibility accord-
394 ing to the following points.

395 (viii) *The plausibility of the premises and the emergence of contradictions.* What charac-
396 terises scientific inquiry for the most part is, among other things, that we do not have a
397 sufficient amount of reliable information to decide on the truth of a given hypothesis.
398 Those *premises* which we are compelled to treat as the starting point of our reasoning
399 *are not to be regarded as certainly true*, but can only be assumed to be *plausible* in the given
400 context, that is, they are *more credible* than their potential alternatives if certain conditions
401 are satisfied.²² Such premises may lead to contradictions:

402 We know that in the case of *deductively valid* arguments one cannot reason from true
403 premises to mutually inconsistent conclusions by the principle of classical deductive
404 logic. But this is not so in *argumentation of sub-deductive strength*. Here it becomes
405 entirely possible – in theory, at any rate – to *build up highly cogent arguments for*
406 *mutually inconsistent conclusions*. When the premises at our disposal are *merely plau-*
407 *sible* [...], it becomes altogether feasible to build up highly convincing arguments on
408 the one side for *P* and on the other for $\sim P$ (Rescher and Brandom, 1980, p. 160; ital-
409 ics as in the original and added).

²¹ We note that the role played by contradictions in linguistic theorising has been investigated by only a few so far. Edith Moravcsik's two publications, which give an illuminating and systematic overview of contradictions arising in syntax, can be regarded to be the standard works in this field: see Moravcsik (1993) and Moravcsik (in press).

²² 'Much if not most of our thinking is carried on under conditions where we do not deem the premises from which we reason to be absolutely certain truths, but merely very probable or *plausible* suppositions.' (Rescher, 1987, p. 303; italics added).

410 (ix) *Informational over- and underdetermination*. There are essentially two possible situ-
411 ations in which contradictions may emerge. On the one hand, the base may be *overdeter-*
412 *mined* by the available amount of information, and it therefore contains contradictory
413 pieces of information. On the other hand, the basis may be *incomplete* (cf. point (iv))—
414 when it *does not contain a sufficient amount of information*—and we may reason from it
415 to a contradictory set of conclusions through the use of plausible inferences (Rescher,
416 1976, 97f).

417 (x) *Plausible inferences and resolving contradictions*. To resolve contradictions, we need
418 to exceed purely formal considerations. In cases where we consider inferences to be tools in
419 information processing (for more on this, cf. Rescher, 1976, 97ff), plausible inferences can
420 be perceived as converting a set of premises into a piece of information with a certain plau-
421 sibility, that is into a conclusion (cf. also point (vi)). This provides an opportunity for us to
422 *compare* the conclusions that can be drawn from particular subsets of an informational set
423 and choose the one which appears to be the most probable, the most optimal, and the
424 most credible for us.²³

425 (xi) *The double relationship between plausible inferences and the emergence of contradic-*
426 *tions*. Summing up what has been stated above, we may establish two essential relations
427 between plausible inferences and contradictions:

428 (a) On the one hand, we have to reason on the basis of not completely trustworthy infor-
429 mation—that is, building on a partial basis (cf. (iv), (vi) and (viii)). We know that
430 only plausible inferences can be drawn from a partial basis, and these inferences
431 can lead to contradictory conclusions in certain cases: to explain one's data, one
432 may set up hypotheses which mutually exclude each other but which are plausible
433 in certain respects (in a given context). This means that the use of plausible inferences
434 may lead to contradictory alternatives. That is, the emergence of contradictions may
435 have its *sources* in plausible inferences.²⁴

436 (b) On the other hand, one may use plausible inferences once again to *resolve* the (pos-
437 sible) contradictions that emerge among the conclusions of plausible inferences
438 obtained from the partial basis, examining which is the most credible out of the *alter-*
439 *natives* in a given context—hoping that sooner or later an informational state is
440 reached wherein novel contradictions do not arise any more (cf. also (xii) and (xiii)
441 on this issue). That is: one of the possible *means* of resolving contradictions is plu-
442 sible inference.

443
444 To sum up: the simplest way to characterise the strong correlation between plausible
445 inferences and the emergence of contradictions is to regard plausible inferences as one
446 of the possible *sources* of the *emergence* of contradictions on the one hand, and as one
447 of the possible *means* to *resolve* contradictions on the other.

²³ 'On the basis of logic [...] one cannot tell what may reasonably be accepted in the face of imperfect, indeed conflicting data. [...] In providing a tool for handling cognitive dissonance, *plausibility theory* affords a reasonable basis for discriminating the inferences which can and cannot be drawn from the inconsistent data-base yielded by the conflicting reports of imperfect sources.' (Rescher, 1976, pp. 4–5; italics added).

²⁴ Of course, a partial basis does not necessarily lead to the emergence of contradictions, but the emergence of contradictions is one possibility that may arise from the peculiarities of the basis.

448 (xii) *The cyclic nature of plausible reasoning.* We reason cyclically by starting off from an
 449 inconsistent set of premises. We return to the problems in question again and again, and
 450 supplementing the partial basis with different latent background assumptions we trans-
 451 form the set of information at our disposal by drawing additional plausible inferences,
 452 and re-evaluate the credibility of the respective data (hypotheses, alternative explanations).
 453 During these cyclic returns we aim to filter out hypotheses unacceptable for some reason
 454 gradually, according to different—possibly contradictory—considerations (cf. e.g.
 455 Rescher, 1976, p. 111, 118; 1987, p. 304 etc.)

456 This way it becomes possible to compare one's cycles and to assess one's progress. First
 457 and foremost, there are two questions one may consider during this process:

- 458 (a) The first question is whether one has managed to root out the contradictions *within a*
 459 *particular cycle* (that is whether one has gained a consistent set of information), or
 460 whether at least the plausibility of any of the contradictory hypotheses has increased.
 461 (b) The second question concerns the degree of plausibility of the *complete* amount of
 462 information within a reasoning cycle as compared to the total of other reasoning
 463 cycles. But this cyclic method of reasoning is by no means equal to vicious circularity
 464 in argumentation:

467 The sort of 'self-criticism' at issue does not reflect any *vicious* or *vitiating circularity*,
 468 but in effect amounts simply to a *feedback* process that uses later, more refined stages
 469 of the analysis to effect revisionary sophistications in the materials from which earlier
 470 stages proceeded. One indeed returns to 'the same point' but does so *at a different*
 471 *cognitive level* (Rescher, 1976, p. 119; italics as in the original and added).

472 (xiii) *The prismatic nature of plausible reasoning.* According to Rescher, the course of
 473 thinking which applies demonstrative reasoning and regards the law of non-contradiction
 474 as a non-violable methodological principle appertains only to an extremely narrow sphere
 475 of the sciences, to mathematics and logic. The sciences belonging to this group have an
 476 axiomatic structure; inconsistency is a *fatal error* for them. It is, however, a different sit-
 477 uation in the case of most other sciences. Research is not axiomatic, but *prismatic*, inas-
 478 much as one tries to approach the given problem from several points of view during the
 479 cycles of reassessing what is known. Here inconsistency is *commonplace*.²⁵

480 (xiv) *Consistency as an ideal.* Obeying the law of non-contradiction is an important
 481 norm, which definitely has to be respected in every case when it is at all possible. In a sig-
 482 nificant number of cases, however, it can only be regarded as an *ideal* which one has to
 483 strive for by every possible means but which often cannot be fulfilled during scientific
 484 inquiries (Rescher, 1987, p. 316).²⁶

²⁵ 'There is a vast difference between the case of reasoning from premises pre-established as certain (as certainly true), and that of reasoning from premises whose acceptability is based on a footing of mere *plausibility* (as plausibly or presumably true). If we are engaged in inquiries where we do not simply reason *deductively from pre-assured premises*, or if *the course of argumentation is* [...] *not deductively conclusive*, then it may make perfectly good sense to [...] consider an issue *prismatically*, by proceeding in the variable light of not merely different but even *inconsistent perspectives*.' (Rescher, 1987, pp. 306–307; italics added).

In a similar way, Polya (1981, Vol. II, 68) also calls attention to the prismatic nature of problem-solving.

²⁶ 'The presence of (weak) inconsistencies seems to be, in fact and principle, inevitable [...].' (Fehér, 1990a, p. 234).

485 Demonstrative reasoning and plausible reasoning bear different relations to the ques-
486 tion of the tolerability of contradictions. In purely deductive systems (disregarding para-
487 doxes) contradictions may not emerge, neither may the necessity to *handle* (in some sense
488 of this word) *contradictions* arise.²⁷ Whereas in the case of plausible reasoning the *provi-*
489 *sional* acceptance of inconsistency may be an option to consider:

490 It may become even reasonable in certain circumstances for a person to *accept a set S of*
491 *statements of whose inconsistency he is certain*, for example when the following conditions
492 obtain:

- 493 1. There is powerful reason for accepting each and every member of the propositional set
494 *S*.
- 495 2. The set *S* is inconsistent (and is recognized as such).
- 496 3. Although consistency can always in theory be restored regarding *S* by *deleting* certain
497 of its elements, this can (as ever) be done in various ways, and *given the limitations of*
498 *information-access and processing under which we actually labor in practice* there simply
499 is no feasible way of justifying any one of these consistency-restoring resolutions vis-à-
500 vis its alternatives.

501
502 In circumstances of this sort it would be quite reasonable to retain one's commitments
503 to *S*—at any rate provisionally, until further notice. For in such a case, the desideratum of
504 consistency-elimination conflicts with other cognitive desiderata (viz., adhesion to the pro-
505 bative standards that endorse the *S*-elements) in such a way that the latter could well out-
506 weigh the former in the specific circumstances at issue (Rescher and Brandom, 1980, 51f;
507 *italics as in the original and added*).

508 (xv) *The local nature of consistency*. It is a consequence of the way our cognition is
509 structured that we always strive for consistency. However, we have to pay a heavy price
510 to preserve consistency because it involves *loss of information* as we have to abandon some
511 of the mutually inconsistent but nevertheless possible pieces of information. This means
512 that we have to disregard some of the alternatives which we have at our disposal and
513 which we cannot exclude with complete certainty at the given moment. We can only
514 achieve *local consistency* at the level of the subject matter of our inquiry by narrowing
515 down upon the domain of phenomena to be captured; but there is no guarantee that we
516 will ever reach a completely consistent system. This is so because globally there may arise
517 contradictions among the locally consistent subsystems which are *irresolvable* in the given
518 informational state.²⁸

519 (xvi) *The rationality of plausible reasoning*. Contrary to what was said in Section 1 of the
520 present study concerning the standard view of the analytic theory of science, rationality
521 cannot be equated with the use of demonstrative inferences. It does not follow from the

²⁷ 'With inferential [...] reasoning, *consistency is everything*. When our starter set of initially accepted premises is not consistent, we can reach no viable results from it. When our conclusions are inconsistent, we are in an untenable position.' (Rescher, 1987, p. 311; italics added).

²⁸ '[...] we shall always strive for consistency *locally* – in any *particular* area of inquiry – under the aegis of locally applicable resolution criteria. Still we can – and should recognize that there may not, nay sometimes will not be any such criteria that are *globally* invariant across the whole spectrum of our investigative concerns.' (Rescher, 1987, p. 312; italics as in the original and added).

522 fact that the conclusion of plausible inferences is not certainly true—but only credible, fal-
523 lible, context-dependent—that it is not rational.²⁹

524 (xviii) *Inconsistency and rationality*. In connection with what was said earlier about
525 inconsistency, ‘in spite of its being *always actually weakly inconsistent*, we can consider
526 actual science a *completely rational and truly scientific enterprise*’ (Fehér, 1990a, 238f;
527 *italics added*; see also Rescher, 1988, Chapter 5).

528 2.3. Summary

529 As a summary of the discussion in Sections 2.1 and 2.2, we may establish that plausible
530 inferences and the emergence of contradictions are essentially interrelated the following
531 ways:

- 532 (a) On the one hand, one *source* from which contradictions emerge in scientific theories
533 is that we are compelled to start reasoning on the basis of uncertain information,
534 from an incomplete and/or inconsistent informational basis, and consequently to
535 use plausible inference patterns; and plausible inferences, in their turn, may guide
536 us to arrive at possibly contradictory conclusions when the given problem to be
537 solved is approached from different directions.
- 538 (b) On the other hand, one *tool* to *resolve* the contradictions that thus emerge in the the-
539 ory is to narrow down the range of possibilities with plausible reasoning to the point
540 where the resulting informational state is already manageable for us—at least
541 locally—but is not yet concomitant with an unacceptable loss of information.
- 542 (c) Plausible reasoning has to tackle the *informational overdeterminacy* of a contradic-
543 tory data set.
- 544 (d) During the plausible reasoning process mentioned in point (b), one proceeds *cycli-*
545 *cally*, inasmuch as one returns to one’s earlier assumptions again and again, contin-
546 uously reassessing them.
- 547 (e) Cyclic reassessments are *prismatic*, because one approaches assumptions from for-
548 ever new points of view.
- 549 (f) In certain cases the contradictions stemming from the uncertainty of the initial
550 assumptions and the incomplete nature of the data set can be resolved through this
551 cyclic and prismatically proceeding mechanism of plausible reasoning, but in other
552 cases globally non-resolvable contradictions may have to *be accepted* while striving
553 for consistency locally.

554
555 The tools of plausible reasoning starting from inconsistent background assumptions are
556 typically employed during much of the problem-solving activities in linguistics. To exem-
557 plify this assumption,³⁰ after the introduction of the background assumptions with the
558 help of which the case study mentioned in Section 1 can be presented, we analyse the argu-

²⁹ ‘But in going beyond the purely formal considerations of logic [...] plausibility theory *does not go beyond the limits of rationality*. Seeking to provide a ‘sensible way’ out of such conflicts – one in which reasonable people can readily agree – it aims at *rational alignment and coordination of inferences*.’ (Rescher, 1976, p. 5; *italics added*).

³⁰ Of course, a general proof of this assumption would be far beyond the scope of the present paper. Therefore, as already mentioned, we will only exemplify it by the case study to follow.

559 mentalational structure of Wurzel's account of German affricates and draw our conclusions
560 with respect to hypotheses (H2) and (H2') in the next part of our paper.

561 3. A case study: on hypothesis (H2')

562 3.1. Raising the problem

563 It is one of the most debated problems in German phonology whether the two native
564 affricates—[pf] (cf. e.g. *Pflicht*) and [ts] (cf. e.g. *Zehn*)—are mono- or biphonemic³¹:

565 (P) Are native German affricates biphonemic or monophonemic?

566 The data at our disposal are already contradictory to start with, as 'affricates have fea-
567 tures which do not lend themselves easily to a uniform interpretation' (Wurzel, 1981, p.
568 938) and thus do not allow for a direct solution to the problem (P). Given the complexity
569 of the data, we might even believe that there is no straightforward answer to (P). But Wur-
570 zel argues that 'we cannot content ourselves with declaring that affricates have both mono-
571 phonemic and biphonemic properties' (Wurzel, 1981, p. 938), because '[n]o matter how we
572 establish a system of features, it has to be such that it is capable of characterising every
573 producible and distinguishable sound segment' (Wurzel, 1981, p. 900). Therefore there
574 cannot be an element in the phoneme system which behaves as a segment and a segment
575 cluster *at the same time*, since every phoneme has to be well-definable as the aggregate of
576 phonological features. This, in turn, means that the properties *biphonemic* and *monopho-*
577 *nemic* are mutually inconsistent in Wurzel's analysis. Furthermore, Wurzel also presup-
578 poses that what is achieved by phonological features not only determines the
579 substantial properties of the particular segments, but also captures their relations to other
580 segments at the same time, and thus we also define their place in the phoneme system. The
581 relations among the elements of the phoneme system are given, among others, by *struc-*
582 *tural rules*. Thus what Wurzel investigates first and foremost is whether affricates *behave*
583 *as single phonemes or as clusters of two phonemes in certain structural rules*.

584 We will reconstruct his arguments—in the spirit of the discussion in Section 2.2—as
585 *divided into argumentational cycles* in Sections 3.2–3.4. of this paper. The analysis will
586 show that as a result of two equally plausible inferences, two mutually contradictory con-
587 clusions can be drawn from the premises. In Section 3.5, we examine those arguments put
588 forward by Wurzel which he intended to employ to resolve this contradiction and we will
589 also make an attempt to introduce further considerations.

590 3.2. First cycle: plausible reasoning in favour of the monophonemic solution

591 The first two arguments of the author take two structural rules as their starting point:

592 (1) (a) If a vowel /V/ follows a formative-initial /C₃C₂C₁/ consonant cluster, then the
593 consonant cluster /C₂C₁/ also occurs in the same position.

³¹ This way of raising the problem clearly goes back to the pre-generative tradition, because the question merely is: one phoneme or two? However, as we already mentioned, Wurzel's solution is embedded into an 'eclectic' framework which makes use of basic assumptions of early generative phonology as outlined in Chomsky and Halle (1968).

594 (b) If a vowel /V/ follows a formative-initial /C₂C₁/ consonant cluster, then the conso-
 595 nant /C₁/ also occurs in the same position.
 596

597 First of all, we mention the fact that (1) may be correlated with the phenomenon which
 598 Greenberg calls ‘resolvability’ and which he describes as follows: ‘Every initial or final
 599 sequence of length m contains at least one continuous subsequence of length $m - 1$ ’
 600 (Greenberg, 1978, p. 250). Nevertheless, on the one hand, Greenberg’s generalisation
 601 quoted above is formulated in an unusually imprecise manner. On the other hand, he
 602 emphasises the fact that though he believes it to apply to a significant majority of lan-
 603 guages, it does not apply to every language. Moreover, it is only supported by certain clus-
 604 ters of data even in particular languages, allowing for many exceptions. Therefore this
 605 generalisation has ‘only statistical validity’ (Greenberg, 1978, p. 250). Consequently, the
 606 assumption that (1) is nothing else but the manifestation of ‘resolvability’ in the German
 607 consonant system is of no relevance for defining what the *argumentational status* of (1) is in
 608 Wurzel’s analysis.³²

609 One can only understand the role played by (1) in Wurzel’s argumentation if due
 610 emphasis is given, in accordance with these considerations, to the *non-demonstrative nature*
 611 *of the inferences* that the *structural rules*, (1)(a) and (1)(b) included, represent in the pho-
 612 nemic system of the German language. This becomes obvious once their origin is taken
 613 into consideration: Wurzel’s writing contains tables on pages 978–981 in which he lists
 614 the formative-initial and the formative-final consonant clusters in German. It is evident
 615 from these tables that only three groups of data support part (a) of rule (1): /spr_/, /
 616 jpl_/, /jtr_/. There is no other evidence in favour of it, and it cannot be deduced from
 617 any further claim of the approach. We may add to this that, starting from these three
 618 cases, he might as well have formulated other structural rules than this, e.g. even one
 619 which states that words starting with three consonants are of the form /jC₂C₃_/. The latter
 620 hypothesis can in fact be found even in Wurzel: ‘In case a formative starts with three con-
 621 sonants in German, the first consonant may only be /j/’ (Wurzel, 1981, p. 978).

622 So we have to conclude that these structural rules are only more or less weak *analogical*
 623 *inferences*. But analogical inferences—as it turns out from Polya’s writings referred to
 624 above—are special instances of plausible inferences, whose credibility is influenced obvi-
 625 ously not only by the size of the data set they can describe but also by the stringency of
 626 their testing.

627 In consequence, one of the starting points of Wurzel’s argumentation, that is (1)(a) and
 628 (1)(b), is *already the result of plausible inferences*. Since—as it will be shown—Wurzel uses
 629 (1)(a) and (1)(b) as premises during the subsequent argumentation, the argumentational
 630 status of (1)(a) and (1)(b) corresponds exactly to the situation illustrated in Section
 631 2.2(viii). That is: the subsequent argumentation is built *on premises uncertain from the out-*
 632 *set*, as these premises were received as conclusions of plausible inferences. (Cf. also e.g.
 633 Section 2.1(vi) on this issue.)

634 Wurzel applies (1) to the *dental affricate* and puts forward a kind of *indirect proof* (Wur-
 635 zel, 1981, p. 938):

³² The notions ‘phoneme’ and ‘rule’ are themselves controversial notions. We note that the interpretation of the rules of generative phonology is far from being unambiguous and it raises many metascientific problems, cf., for example, Hutchinson (1980).

636 (2) Let the formatives containing the dental affricate [ts] in formative-initial position be
637 given, e.g. *zwar* [tsva:r]. Let us assume that the dental affricate is biphonemic and let
638 us see what follows from this assumption. From this assumption it follows that the
639 dental affricate has the phonemic structure /ts/. For this reason, the phonological
640 representation of the formative *zwar* will be /tsva:r/, and rule (1)(a) can be applied
641 to the dental affricate; however, what follows from (1)(a) is that the /sv_/ phoneme
642 cluster also exists, but no formative exists with this structure. Consequently, our initial
643 assumption was false. Therefore the contrary assumption has to be accepted: the
644 dental affricate is monophonemic. If we assume that the dental affricate is monopho-
645 nemic, then /t^s/ will be analysed as a single phoneme in the formative *zwar*, and
646 according to (1)(b), there exists therefore a formative of the structure /va:_/. And this
647 is true, cf. *war*.
648

649 This reasoning can be reconstructed the following way:

650 (3) Premises:

- 651 P1: The dental affricate is biphonemic, that is, its phonemic structure is /ts/.
652 P2: *Zwar* is an existing formative in German.
653 P3: The rule marked (1).
654 P4: There exists a German formative with the structure /sva:_/.
655 P5: There exists a German formative with the structure /va:_/.

656
657 Inferences:

- 658 (a) It is possible that if P1 & P2 & P3, then P4
659 P4 has been refuted
660 $\sim(P1 \& P2 \& P3)$ is more credible, which is equivalent to saying that P1 & P2 &
661 P3 is less credible.³³
662

663 We may conclude that out of P1, P2 or P3, at least one is probably false; it is our task to
664 decide which one. Because P2 is certain, we may abandon P1, but we may also abandon
665 P3.

- 666 (b) It is possible that if $\sim P1$ & P2 & P3, then P5
667 P5 has become certain
668 $\sim P1$ & P2 & P3 is more credible.³⁴
669
670

671 Wurzel examines the *labial* affricate on the basis of the following ‘mirror-image rule’:

672 (4) If the phoneme cluster /C₁C₂_/ occurs formative-initially, then there exists a forma-
673 tive in which the phoneme cluster /_C₂C₁/ occurs formative-finally.

³³ This inference is an instance of *shaded modus tollens*: {It is possible that if *A*, then *B*; *B* has been refuted} $\Rightarrow \sim A$ is more credible (that is, *A* is less credible).

³⁴ This inference is an instance of *shaded reduction*: {It is possible that if *A*, then *B*; *B* has become certain} $\Rightarrow A$ is more credible.

674

675 The acceptability of this structural rule is weakened by several exceptions, however,
 676 which Wurzel also mentions (Wurzel, 1981, p. 938): *Twist*, *Schwall*, *quer*.³⁵ Because (4)
 677 is thus not without exceptions, its logical status can be argued to be the same as that of
 678 (1): it relies on *plausible* inference, and the conclusion of this plausible inference is used
 679 as a *premise* in the subsequent argumentation.

680 Starting from (4), Wurzel employs the method of *indirect proof* (cf. Kertész, 1993 on
 681 this) again and argues the following way:

682 (5) Let the formatives containing the labial affricate [pf] in formative-initial position be
 683 given, e.g. the formative *Pfote* [pfo:tə]. Let us assume that the labial affricate is
 684 biphonemic, and let us see what follows from this assumption. From this assumption
 685 it follows that the labial affricate has the phonemic structure /pf/. Rule (4) is conse-
 686 quently applicable to the formative *Pfote*. And what follows from (4) is that the pho-
 687 neme cluster /_fp/ occurs formative-finally. However, there exists no such phoneme
 688 cluster: only /pf/ may occur formative-finally, cf. *Topf*/tɔpf/, but not /fp/. Conse-
 689 quently, our initial assumption was false. Therefore the contrary assumption has
 690 to be accepted: the labial affricate is monophonemic. If we assume that the dental
 691 affricate is monophonemic, then /p^f/ will be analysed as a single phoneme in the for-
 692 mative *Pfropfen*, and according to (4), there exists therefore a formative of the struc-
 693 ture /_rp^f/. And this is true, cf. *Karpfen*.

694

695 The structure of the argument can be reconstructed as follows:

696 (6) Premises:

697 P1: The labial affricate is biphonemic, that is, its phonemic structure is /pf/.

698 P2: *Pfote* is an existing German word.

699 P3: The rule marked (4).

700 P4: There exists a German formative with the structure /_fp/.

701 P5: *Pfropfen* is an existing formative in German.

702 P6: There exists a German formative with the structure /_rp^f/.

703 Inferences:

704 (a) It is possible that if P1 & P2 & P3, then P4

705 P4 has been refuted

706 $\sim(P1 \& P2 \& P3)$ is more credible, that is P1 & P2 & P3 is less credible.

707

708 One may conclude that out of P1, P2 or P3, at least one is probably false. It is our task
 709 to decide which one. Since P2 is certain, we may choose to abandon P1 or P3.

710 (b) It is possible that if $\sim P1 \& P5 \& P3$, then P6

711 P6 has become certain

712 $\sim P1 \& P5 \& P3$ is more credible³⁶

713

³⁵ We may further add that Wurzel does not even think of examining whether the phoneme clusters /tv/, /kv/, and /jv/ are monophonemic or not.

³⁶ (6)(a) is an instance of *shaded modus tollens* and (6)(b) that of *shaded reduction*.

714

715 The inferences reconstructed in (3) and (6) lead to the formulation of the following *plau-*
716 *sible* generalisation, which may be regarded as one possible solution to the problem (P):

717 (7) Native German affricates are monophonemic.

718

719 3.3. *Second cycle: plausible reasoning in favour of the biphonemic solution*

720 At this point, however, the question whether we could argue otherwise immediately
721 emerges. The answer is that we can, and in fact we have to! The reason is the following.

722 As we know, Wurzel obtains (7) through the application of plausible inference patterns.
723 But we also saw in Section 2.1(iv) of the present study that in the case of plausible inferences,
724 it may happen that we obtain some new information that leaves the validity of the premises
725 intact, but still influences the argumentation in a direction ‘just opposite to that expressed in
726 the conclusion’ (Polya, 1948, p. 223). Since, as was shown, Wurzel employs plausible infer-
727 ence patterns in the case discussed above, the appearance of novel considerations which
728 influence the argumentation in a direction opposite to (7) cannot be excluded in advance.
729 And if novel considerations indeed arise and they have exactly this result, then this means
730 that *two conclusions are drawn which each derive from equally acceptable premises but which*
731 *contradict each other*. Thus the fact that Wurzel obtained (7) through plausible reasoning
732 naturally involves the possibility that a conclusion contradictory to (7) can be drawn.

733 Wurzel actually *realises* this possibility and *indeed* proceeds according to this realisa-
734 tion. To understand his subsequent steps in argumentation, we, first of all, have to sum
735 up the following aspects of his procedure up to this point:

- 736 (a) He defined a certain set of data as a starting point.
737 (b) He formulated certain rules as a result of the application of plausible inference pat-
738 terns (cf. (1) and (4)).
739 (c) He considers these rules and the description of the data to be premises of plausible
740 inferences.
741 (d) He presents (7) as a plausible conclusion arising from these premises.

742
743 But: during this procedure, he correlates *certain* data with *certain* rules to form pre-
744 mises. Wurzel himself also makes it clear though that these rules and data could be corre-
745 lated in other ways, too. More explicitly, the rules and the data can also be correlated
746 through a mapping which is the reverse of what he did in (2) and (5) (Wurzel, 1981, pp.
747 938–939). Thus we face exactly the same situation as is described in Section 2.1(iv) and
748 is analysed in Section 2.2. Without abandoning the structural rules employed as premises
749 (that is, (1) and (4)—in other words, the visible part of the basis), the plausibility of novel
750 premises which may lead to a conclusion possibly contradictory to (7) has to be accepted.
751 Let us see whether it is indeed so. In fact it is easy to realise that it *is*, since what follows
752 from Wurzel’s premises formulated expressis verbis is the argumentation below (cf. also
753 Kertész, 1993, 2004a):

- 754 (8) Let the formatives containing the labial affricate in formative-initial position be given,
755 e.g. the formative *Pflicht* [pflɪçt]. Let us assume that the labial affricate is biphonemic.

756 Then the labial affricate has the phonemic structure /pf/. Rule (1) is consequently
757 applicable to the formative *Pflicht*; and what follows from (1) is that the phoneme
758 cluster /fl/ occurs in the given position, and so does the phoneme /l/. And this assump-
759 tion is correct as *flicht* and *Licht* are existing German formatives. Consequently, the
760 labial affricate is biphonemic according to this reasoning. If we start from the assump-
761 tion that the labial affricate is monophonemic, then its phonemic structure is /p^f/ and
762 only point (b) of rule (1) can be applied to it; the labial affricate indeed satisfies this
763 rule as besides e.g. the formative *Pflicht*, the formative *Licht* also exists.

764
765 The structure of the argument:

766 (9) Premises:

- 767 P1: The labial affricate is biphonemic, that is, its phonemic structure is /pf/.
768 P2: *Pflicht* is an existing formative in German.
769 P3: The rule marked (1).
770 P4: There exist German formatives of the structure /flI_/.
771 P5: There exist German formatives of the structure /lI_/.

772
773 Inferences:

- 774 (a) It is possible that if P1 & P2 & P3, then P4 & P5
775 P4 & P5 has become certain
776 P1 & P2 & P3 is more credible
777 (b) It is possible that if ~P1 & P2 & P3, then P5
778 P5 has become certain
779 ~P1 & P2 & P3 is more credible.³⁷

782
783 (9)(b) leads to a conclusion which is just the opposite of the conclusion in (9)(a), that is,
784 a *local contradiction* arises. This, however, (contra Wurzel's opinion) can be resolved as we
785 can make a decision between (9)(a) and (9)(b). On the one hand, we can say that we
786 employ Ockham's razor and therefore choose the biphonemic solution, as this does not
787 result in the introduction of a new phoneme.³⁸ The relevance of this principle is empha-
788 sised in Wurzel's argumentation with respect to the analogous problem of the interpreta-
789 tion of diphthongs (Wurzel, 1981, p. 920). On the other hand, these two lines of reasoning
790 are not completely independent: every example that complies with (9)(a) will necessarily
791 comply with (9)(b), too.

792 As for the dental affricate, the following reasoning presents itself:

793 (10) Let the formatives containing the dental affricate in formative-initial position be
794 given, e.g. the formative *zehn* [tse:n]. Let us assume that the dental affricate is biph-

³⁷ Both (9)(a) and (b) are instances of *shaded reduction*.

³⁸ Please note that referring to Ockham's razor should be treated with caution and needs refined evaluation relative to the particular context of reasoning. In fact, one analysis may be simpler in certain respects than a competing analysis, whereas the competing analysis will be simpler in another respect. Such considerations appear to be instructive cases of prismatic and cyclic argumentation.

795 nemic. Then the dental affricate has to have the phonemic structure /ts/. Rule (4) is
796 consequently applicable to the formative *zahn*. What follows from (4) is that the pho-
797 neme cluster /_st/ occurs formative-finally. This assumption is correct, since the for-
798 mative *Nest*, for example, is an existing formative, whose phonological
799 representation is /nest/. Therefore, the dental affricate is biphonemic according to
800 this reasoning.³⁹

801
802 The structure of the argument is similar to the previous ones⁴⁰:

803 (11) Premises:

804 P1: The dental affricate is biphonemic, that is, its phonemic structure is /ts/.

805 P2: *Zahn* is an existing formative in German.

806 P3: The rule marked (4).

807 P4: There exists a German formative with the structure /_st/.

808 Inference:

809 It is possible that if P1 & P2 & P3, then P4

810 P4 has become certain

811 P1 & P2 & P3 is more credible.⁴¹

812

813 That is we obtain the following possible solution as a plausible generalisation on the
814 basis of (9) and (11):

816

817 (12) Native German affricates are biphonemic.

818 3.4. Summary

819 The gist of Wurzel's argumentation we have reconstructed so far—in the light of the
820 general mechanism described in Section 2 of the present study—can be summed up as
821 follows:

822 *Contradictory* conclusions—i.e. (7) and (12)—have been reached on the basis of two,
823 *equally plausible* inference sequences, while the premises have remained valid in both infer-
824 ence sequences.

825 The second inference sequence (cf. (9) and (11)), which has led to the biphonemic solu-
826 tion, has come about as a result of a procedure during which the information available
827 after the monophonemic solution has been *prismatically*—from another point of view—
828 re-evaluated. The argumentation was accordingly *cyclic*, since the prismatic re-evaluation
829 of the information occurred in a subsequent cycle of the argumentation.

³⁹ If we want to examine the hypothesis which treats the dental affricate as monophonemic, then there is only one example to consider, namely the formatives of the structure /t^sv_/, but formatives with a /Cv_/ structure have been excluded from the domain of rule (4) by Wurzel.

⁴⁰ We have to point out that Wurzel's reasoning is faulty, since though he tries to find out what happens if one assumes that the dental affricate is monophonemic, what he examines is not how formatives with the structure /t^sK_/ behave, that is, whether there also exists /_Kt^s/ in every such case, but he just simply makes reference to the fact that there exists not only *Nest* but *Netz* in correlation to *zahn*.

⁴¹ This inference is an instance of *shaded reduction*.

830 As a special manifestation of the general mechanism described in Section 2, what we
 831 can establish at this point of the analysis of his argumentation is that Wurzel's analysis
 832 leads to two conclusions that contradict each other on the basis of (a) an inconsistent
 833 set of data, (b) premises that make up only a partial basis, (c) the use of plausible inference
 834 patterns, and (d) the application of cyclic and prismatic reasoning.

835 We have emphasised in Section 2.3 that there exist two fundamental relations between
 836 plausible inferences and the emergence of contradictions. Accordingly—after establishing
 837 that the plausible inferences conducted thus far have led to a contradiction—we will con-
 838 tinue our presentation with an exploration of the argumentational structure of those
 839 attempts that may be made in conformity with the cyclic and prismatic nature of plausible
 840 inference, starting from Wurzel's original train of thought and then gradually breaking
 841 away from it to *resolve* the contradiction.

842 3.5. Wurzel's attempts at resolving the contradiction

843 *Third cycle:* Wurzel draws further structural rules and other considerations into his
 844 attempts at the solution. He introduces the following structural rule:

845 (13) If preceding a vowel, the phoneme /v/ can only occur alone or as part of a two-mem-
 846 ber phoneme sequence.

847
 848 Examples: *schwingen* [ʃvɪŋən], *winken* [ʃvɪŋkən].

849 The argument is based on the fact that there exist such formatives as e.g. *zwingen*
 850 [tʃvɪŋən] or *zwar* [tʃvɑ:r]; if the dental affricate were biphonemic in these latter cases, then
 851 their phonemic representation would have to contain the phoneme sequence /tʃv/. This,
 852 however, is impossible as it contradicts rule (13). At the same time, if we assume that
 853 the phonological representation of the dental affricate is /tʃ/, and we regard it as monopho-
 854 nemic, we do not violate (13) since the phoneme /v/ occurs as part of a two-member pho-
 855 neme sequence.

856 If this argument were independent of (1), it could be used to provide independent evi-
 857 dence and, as part of a plausible inference sequence—at least temporarily, at this stage of
 858 the argumentation—to tip the balance in the favour of a monophonemic interpretation of
 859 the data. Wurzel's reasoning is, however, incorrect, inasmuch as he treats (13) as an inde-
 860 pendent argument, since as long as we regard (1) as valid, (13) will be true almost 'auto-
 861 matically': first of all, (1) excludes formatives of the structure /tʃv_/, and, also as a
 862 consequence of (1), (13) merely states that formatives of the form /C₁fv_/ and /C₁kv_/
 863 are not possible (because there is no other formative-initial syllable besides /fv_/ and
 864 /kv_/ in which a consonant and /v/ precedes a vowel. Thus (13) does not create a new sit-
 865 uation, and *as a result of its weakness* it is not able to resolve the contradiction. We may,
 866 however, try to use (13) as a very weak analogical inference if we give up (1).⁴²

867 The last structural rule of Wurzel is the following:

868 (14) Not only short vowels, but also long vowels and diphthongs may precede a single
 869 consonant.

⁴² Cf. also the possible cycles after Table 10 on this.

870

871 The monophonemic nature of /t^s/ becomes more credible on the basis of this rule (cf.
872 *Mieze, Brezel*, etc.). The structure of this argument corresponds to *shaded reduction*, which
873 has been shown before and which is therefore not presented here in detail. But the cred-
874 ibility of /p^f/ decreases (cf. */taopf/, */to:pf/)—the structure of this argument is *shaded*
875 *modus tollens*, which has also been shown already and which we do not have to repeat here
876 in detail for this reason.

877 Wurzel develops two further arguments: one is based on the study of stress relations in
878 non-native words, and the other is based on the observation that affricates ‘participate in
879 certain peripheral phonological alternations’ (Wurzel, 1981, p. 940). The first of these
880 arguments is refuted by Kertész (2004a, 341f), and the other one is immediately withdrawn
881 by Wurzel himself. The situation can be summed up on the basis of this information in
882 Table 4.

883 Thus we can make the substantial claim that the contradictory nature of the
884 approach—as a result of the failure of the attempts to resolve the contradiction—has
885 not decreased but increased, since the amount of inconsistent information has grown as
886 compared to the level reached in cycle 2. At this point the argumentation that Wurzel sets
887 forth comes to an end. Consequently, *the 3-cycle argumentation he has presented terminates*
888 *in a contradiction which appears irresolvable*.

889 To understand this conclusion, one needs to differentiate between two points of view:
890 between the *irresolvability* of a contradiction and the application of a possible *heuristic*
891 tool to resolve a problem arising in a theory that contains an irresolvable contradiction.

Table 4

	[ts]		[pf]	
structural rule	biphonemic	monophonemic	biphonemic	monophonemic
(1)	–	+	+	–
(4)	+		–	+
(14)		+		–

Here the mark ‘+’ denotes that the given phoneme cluster satisfies the relevant rule, ‘–’ means the cluster does not satisfy the rule, and the shaded cells indicate that the relevant rule cannot be applied to the given phoneme since its conditions of use are not satisfied.

892 A contradiction within a theory is deemed *irresolvable* if one of the following conditions
893 is satisfied (cf. also point (xii)):

- 894 (a) If one does not find a cycle among the ones already executed which, considering the
895 whole spectrum of the information available,⁴³ renders one of the two hypotheses
896 clearly more plausible than the other.
- 897 (b) If one does not find a cycle among the ones executed which satisfies the condition
898 mentioned in (a) and which altogether appears more correct and more credible than
899 any other argumentational cycle.
- 900

901 Nevertheless, the presence of such an irresolvable contradiction does not mean that it is
902 impossible to find another *heuristic* tool at some point in the argumentation to resolve a
903 given problem in a non-contradictory way. One can always decide—in the absence of con-
904 vincing plausible arguments, even in an arbitrary manner—not to use any of the contra-
905 dictory claims as premises in subsequent inferences (cf. the quotation taken from the book
906 by Rescher and Brandom (1980) in point (xiv)). This decision is no doubt one of the heu-
907 ristic tools available. And Wurzel does precisely this: though, as we saw, one cannot decide
908 between the monophonemic and the biphonemic solution on the basis of those plausible
909 arguments which he shows, and therefore his system contains an irresolvable contradic-
910 tion, he still accepts (7) as the premise of his subsequent reasoning. Let us take a closer
911 look at what it means when on the one hand, a theory contains an irresolvable contradic-
912 tion, while on the other, there may be found a non-contradictory heuristic tool to resolve
913 the problem which motivated the development of the theory itself!

914 In this respect, Wurzel's analysis is characterised by exactly the same dichotomy as
915 what is plastically formulated in Rescher and Brandom (1980, 51f)—cf. (xiv). On the
916 one hand, he is evidently fully aware of the principle that the consistency of a theory
917 can always be restored by *deleting* certain of its elements, since in his subsequent argumen-
918 tation, as has been mentioned, he accepts (7) as a premise while deleting (12) from among
919 the premises. In this way he avoids the destructive consequences stemming from the pres-
920 ence of inconsistent premises. On the other hand, however, he has to accept at the same
921 time that 'the desideratum of consistency-elimination conflicts with other cognitive desid-
922 erata [...] in such a way that the latter could well outweigh the former in the specific cir-
923 cumstances at issue' (Rescher and Brandom, 1980, p. 52). Therefore all those bits of
924 information that bear upon (12) remain part of the approach, as he neither refutes them
925 nor can he eliminate them since their elimination, given the complex properties of German
926 affricates, would result in the loss of such a large amount of information that he—likewise
927 in the spirit of Rescher and Brandom, 1980—cannot accept.

928 What we see then is that, on the one hand, Wurzel's analysis contains a contradiction
929 which is irresolvable in the above sense, and on the other hand, he only uses one of the
930 contradictory claims—i.e. (7)—as a premise in his subsequent reasoning. Why should he
931 allow for this duality? In other words: once he cannot resolve the contradiction between
932 (7) and (12) through plausible reasoning, why does he decide notwithstanding not to
933 use (12) as a premise (while it stays part of his approach)? The answer is simple: this deci-

⁴³ Even if only provisionally and only 'up to a point'—cf. Rescher, 1987, p. 304—as it may become possible later on to execute other cycles in the light of new information.

934 sion has a *heuristic* motivation, inasmuch as it has to solve the problem posed by the task
935 of working out the phonemic system of the German language. To build up this phonemic
936 system, he *has to* decide whether the affricates will be independent phonemes in the system
937 or not. It is not by chance that he emphatically treats the solution to the problem posed by
938 the affricates as a prerequisite for the elaboration of the consonant system:

939 In what follows, we will analyse and classify consonants according to how we analysed
940 and classified the vowels of the German language with the help of phonological
941 features in the previous section. This obviously *presupposes* that it is known which
942 consonant-segments occur in German. Again, it is only possible to answer this question
943 *if we can make a distinction between a single phoneme and a phoneme cluster in every
944 single case* (Wurzel, 1981, p. 937; italics added).

945 Because of this heuristic reason, he has to make this decision even if there are no plausible
946 arguments at his disposal which he could use to decide between (7) and (12).⁴⁴

947 That the argumentation shown above runs into contradiction may in principle be a consequence
948 of two factors. First: The information available is indeed contradictory to such an extent
949 that it is not possible to find a consistent solution to (P). Second: Though it is possible
950 to resolve the contradiction on the basis of the information available, Wurzel did not manage
951 to find those plausible arguments that he could have used to resolve it. Therefore—as part
952 of the present argumentation-analysis—we have to investigate *the question of which of these
953 two cases holds true*. Consequently, what we show in the argumentation-analysis below is
954 *further possible* argumentational cycles which are *de facto missing from* Wurzel's explicitly
955 presented analysis, but which can be executed by making use of the information contained
956 within the system—that is, the partial basis and the plausible inferences that can be drawn
957 from the basis—and which *could also have been* executed by Wurzel.

959 3.6. Further possible plausible inference cycles

960 *Fourth cycle:* We might try to make the application of the structural rules *systematic*.
961 This means that every structural rule is checked against the whole domain of the data:

962 (15) If we check with respect to (6)(b) whether Wurzel's investigations were comprehensive,
963 then we have to conclude that they were not: a (6)(b)-type inference has to be performed
964 for every possible formative of the structure /p^fC_/. If we do this, we get a negative result:
965 /p^f/ is possible formative-initially (cf.: *Pflaume*); we cannot find, however, a formative
966 with a final /lp^f/. Thus, as a result of a reasoning similar to (6)(a), we have to draw the
967 plausible conclusion that the credibility of the monophonemic nature of the labial affricate
968 has decreased.
969

⁴⁴ This conclusion of ours is in full accordance with what Nickles maintains: The point here is that *heuristic fertility trumps consistency*. Researchers rarely reject a promising approach on the ground that it is apparently inconsistent. [...] The question reduces to that of when and where heuristic appraisal, including matters of cognitive economy, overrule consistency demands. Unfortunately, this area of methodology remains very underdeveloped (Nickles, 2002, pp. 20–21; emphasis as in the original).

970 The situation has changed the way illustrated in Table 5.

971 *Fifth cycle:* What we have found is that the labial affricate does not satisfy (4) either in
972 its monophonemic or in its biphonemic interpretation. One has to try to resolve this local
973 inconsistency by all means. Let us first consider not accepting (4) as a structural rule—this
974 is anyway motivated by the fact that several counterexamples argue against it (cf. Section
975 3.2); see Table 6.

976 *Sixth cycle:* In the informational state represented in Table 6, it is only a single struc-
977 tural rule, viz. (1), which forces us to introduce a new phoneme to our system, the pho-
978 neme /t^s/. We may decide not to introduce a new phoneme /t^s/ and to abandon (1).
979 Thus we would proceed similarly as in the case of (4), since this rule was also rejected
980 because of the existence of counterexamples (Table 7).

981 *Seventh cycle:* In this way, however, a decision is made solely on the basis of a single
982 structural rule, that is, we may say that the solution indicated in Table 7 would result
983 in an unduly great loss of information (cf. Section 2.2(xiv)). But such great loss of infor-
984 mation cannot be tolerated for heuristic reasons, as it removes us from the proximity of a
985 potential solution to (P). It would be worth therefore trying to maintain (4) and regarding
986 the formatives with the structure /Cv_/ as exceptions on the basis of the assumption that
987 we might be able to find an explanation for the behaviour of such phoneme clusters later
988 on. That the exceptions have a similar structure may give us some hope:

989 (16) (4) cannot be applied to /t^s/ because the only such formative onset is /t^sv_/, but that
990 is classified as an exception because of its structure.

991 (17) As /f/ is the voiceless counterpart of /v/, as a result of analogical reasoning, /pf/ can
992 also be regarded as an exception to (4).
993

Table 5

	[ts]		[pf]	
structural rule	biphonemic	monophonemic	biphonemic	monophonemic
(1)	-	+	+	-
(4)	+		-	-(15)
(14)		+		-

Table 6

	[ts]		[pf]	
structural rule	biphonemic	monophonemic	biphonemic	monophonemic
(1)	–	+	+	–
(14)		+		–

Table 7

	[ts]		[pf]	
structural rule	biphonemic	monophonemic	biphonemic	monophonemic
(14)		+		–

994 On the basis of these considerations we obtain the situation summarized in Table 8.

995 *Eighth cycle:* If we bring (1) back, too, then the situation in Table 9 arises.

996 The foregoing conclusions are summed up in Table 10.

997 However, the complications are still not over. Among others, the following need to be
998 considered thoroughly.

999 *First:* It should also be examined whether a different result would be reached by executing
1000 the cycles in a different order. The answer is yes. There is only a single exception: to be able
1001 to check whether (4) is satisfied or not, the fourth cycle is indispensable, therefore the sim-
1002 plest thing to do is to make it part of the verification of this rule. The other cases, however,
1003 can be examined in any order (what is more, structural rules may even be given up). There-
1004 fore there is no mechanic way to decide what to lift from the partial basis (cf. Section
1005 2.1(iv)) as a latent premise. Thus depending on where one starts his reasoning, a different
1006 result is obtained in each case.

Table 8

	[ts]		[pf]	
structural rules	biphonemic	monophonemic	biphonemic	monophonemic
(4)	+	(16)	(17)	–
(14)		+		–

Table 9

	[ts]		[pf]	
structural rule	biphonemic	monophonemic	biphonemic	monophonemic
(1)	–	+	+	–
(4)	+			–
(14)		+		–

1007 *Second: It is not only the introduction of a structural rule that needs to be accounted for*
 1008 *but also its abandonment: one only has the right to give up definitively (4) or (14), for exam-*
 1009 *ple, if one makes sure that no other rule can be found for their counterexamples that can*
 1010 *account for their recalcitrant behaviour (as giving up a rule is always concomitant with a*
 1011 *loss of information, the acceptability of which one has to weigh up).*

Table 10

Cycle	[ts]	[pf]
1	M	M
2	b	b
3	m	m/b
4	m	m/b
5	M	B
6	m	b
7	b	B
8	m	B

What M denotes is that the monophonemic nature of the relevant phoneme cluster is credible; m means that monophonemicity is possible, but less credible; B and b have a similar meaning with respect to biphonemicity.

1012 *Third:* as has already been indicated with respect to (3) and (6) in Section 3.2, if a pho-
 1013 *neme (cluster) does not obey a structural rule, one can proceed in two different ways.* One can
 1014 conclude that the given phoneme cluster is not biphonemic, but monophonemic (or con-
 1015 versely), or, alternatively, the relevant structural rule can also be abandoned. Thus every
 1016 time the inference at issue is an instance of shaded modus tollens, one faces two options.
 1017 Therefore the eight cycles above (disregarding their order) represent *only one side* of the
 1018 ‘prism’ through which the behaviour of the affricates is observed: those situations where
 1019 either (1), (4) or, for that matter, (14) are given up, also have to be examined respectively.

1020 *Fourth:* Consequently, the respective cycles are not to be regarded as linearly ordered,
 1021 but as possibilities of the same rank. This, however, does not mean that the alternatives are
 1022 equally plausible. The problem is that it is impossible to quantify the degree of credibility
 1023 and it may show great cross-individual variation depending on which factor is important
 1024 for a linguist and which one is less so (cf. the quotation in Footnote 17). The procedure of
 1025 deciding between the alternatives, i.e. the mechanism of cyclic and prismatic assessments,
 1026 contains several constituents that are relevant but not subject to formal and algorithmic
 1027 treatment.

1028 *Fifth:* As a consequence of this latter problem, it would not lead to a solution either to
 1029 devise a computer programme with the help of which all the possible solutions that are
 1030 compatible with the data could be surveyed.⁴⁵

1031 *Sixth:* Novel (structural) rules may also be found. For example, instead of (1)(a), (18),
 1032 which has already been mentioned in Section 3.2, can also be introduced to the system:

1033 (18) Formatives with an initial consonant cluster of 3 members are of the form /jC₂C₃_/.

1034

1035 By applying (18) we would get both affricates as monophonemic. Or: if we abandon (1),
 1036 we might refer to (13) and could even set up (19) through analogical reasoning (cf. *Sprosse*,
 1037 *spleißen*, *Straße*, and *Pfriem*, *Pflaume*):

1038 (19) If preceding a vowel, the phonemes /l/ and /r/ also occur as part of a 3-member pho-
 1039 neme sequence.

1040

⁴⁵ For a general discussion of the evaluation of computer programmes that model scientific discoveries, cf. e.g. the 19 (1989)–22 (1992) volumes of the *Social Studies of Science*.

1041 According to this rule, the labial affricate is biphonemic.

1042 *Seventh:* Taking the moral of Table 10 into consideration, we may also consider (20) as
1043 a possible solution:

1044 (20) The dental affricate is monophonemic and the labial affricate is biphonemic.

1045
1046 To entertain the possibility of this solution is contrary to Wurzel's procedure, and in
1047 fact well exceeds the limitations of his system. This is so because, on the one hand, Wurzel
1048 accepts the latent premise that the two affricates are to be treated uniformly (either both of
1049 them are treated as monophonemic or as biphonemic). On the other hand, as we have
1050 already referred to, he finds a *paraconsistent* way out of the informational state containing
1051 an irresolvable contradiction when he accepts (7) as a premise of his subsequent inferences,
1052 simply disregarding the plausible arguments against (7) and in favour of (12) and thus
1053 making no simultaneous use of (7) and (12) as premises.⁴⁶

1054 However, *the plausibility* of the so far unconsidered assumption that the dental affricate
1055 may be mono-, and the labial affricate biphonemic, *is relatively high* as compared to the
1056 previous proposals for the following reasons.⁴⁷

- 1057 (a) In point 3.6. of the present study we executed many more argumentational cycles
1058 than Wurzel did, therefore we have considered and assessed a lot more data than he.
1059 (b) The many argumentational mistakes committed by Wurzel⁴⁸ all indicate that there is
1060 a very strong background assumption lying behind his reasoning: the assumption
1061 that the two native affricates of German have to be treated uniformly. We have
1062 not found, however, an argument in his argumentational cycles so far which would
1063 render it necessary to accept this assumption.
1064 (c) Among the possible solutions that have been presented thus far, it is (20) that is com-
1065 patible with the greatest number of argumentational cycles.
1066 (d) All this does not mean, however, that (20) could be accepted as a solution to (P). It is
1067 obviously not a suitable tool either to provide the *ultimate solution to resolve* the con-
1068 tradiction between (7) and (12), but can only be regarded as an attempt to find the
1069 answer which is the most credible on the basis of the data available. (20) satisfies only
1070 condition (a)—mentioned in point 3.5.—of the resolvability of the contradiction,
1071 and it does not satisfy condition (b): though it presents the alternative in which
1072 the dental affricate is monophonemic as more credible than the one in which it is
1073 biphonemic; we cannot, however, say that either one of the argumentational cycles
1074 that support this decision appears to be definitely more probable, to contain fewer
1075 open problems or to be more satisfactory than the others. Still, as one of the results

⁴⁶ See Section 2.2 for the notion of paraconsistency.

⁴⁷ A very convincing illustration of the mechanisms of plausible reasoning with respect to German affricates may be the fact that—starting from a different partial basis and applying different cycles of prismatic evaluation of assumptions—in Dogil and Jessen (1989) on the one hand it is also maintained that the two native affricates of German cannot be treated uniformly, but on the other hand (in contrast to our conclusion which remains within Wurzel's framework) the authors conclude that it is the labial affricate that is clearly monophonemic whereas the dental affricate may be biphonemic.

⁴⁸ Cf. (9), (11), (15), or, for example, the fact that he disregards (14) with the explanation that '/f/ is also almost exclusively preceded by short vowels only' (Wurzel, 1981, p. 939).

1076 of our argumentation-analysis it draws attention to a new alternative to solve (P),
1077 which has a relatively high plausibility as compared to other alternatives, but which
1078 is not recognised by the maker of the approach.

1079

1080 Thus the following refined answer can be given to the question we posed at the end of
1081 the previous subsection:

1082 The contradiction between (7) and (12) cannot be resolved with the available tools, on
1083 the basis of the available information and within the confines of the given approach. How-
1084 ever—still within the confines of this approach—we may find argumentational cycles
1085 which Wurzel did not discover and whose plausibility may be higher than that of other
1086 cycles.

1087 4. Conclusions

1088 4.1. The plausibility of (H2') and (H2)

1089

- 1090 (a) We presented a case study in Section 3, which centres around the behaviour of Ger-
1091 man affricates. We saw that two mutually inconsistent solutions to the problem (P)
1092 can be gained with plausible reasoning in Wurzel's analysis.
- 1093 (b) The argument-analysis in Section 3.6. showed that the inferences that are not dis-
1094 cussed *expressis verbis* in Wurzel's quoted writing but which can be made on the
1095 basis of the data available do not lead to a consistent solution to (P), either. As a
1096 result of the analysis of the argumentational cycles presented—with no claim to com-
1097 pleteness—the contradictory nature of the approach stands out plastically. Thus the
1098 conclusion in Kertész (2004a) that the contradiction is *not resolvable* in the given
1099 informational state in any argumentational cycle, has been reinforced again with
1100 the introduction of new considerations. Therefore there is no other way of handling
1101 this informational state than to have recourse to the help of a *paraconsistent* logical
1102 system. This was not discussed here, as Kertész (2004a) already presented a recon-
1103 struction of Wurzel's analysis of affricates which was performed with the help of
1104 paraconsistent logic.
- 1105 (c) Thus hypothesis (H2') was reinforced and we obtained an answer to question (Q).
1106 We would like to stress the fact that during the metatheoretical analysis performed
1107 in Section 3 we, too, were working only with a partial basis, plausible premises and
1108 plausible inference patterns deriving from these. At the same time, the plausibility of
1109 (H2') is strong in the current informational state of our *own* argumentation, since we
1110 have no knowledge of any plausible argument that would contradict (H2') on the
1111 basis of the facts considered so far, though the subsequent emergence of such argu-
1112 ments is obviously not excluded.
- 1113 (d) Consequently, we thus accomplished the task that we set out to accomplish in the
1114 present paper: *we reinforced the plausibility of (H2') through the case study presented,*
1115 *and as a consequence of that, we also have to accept (H2).*

1118 4.2. Perspectives and open questions

1119 The hypotheses that we formulated as the starting point of the paper thus having been
1120 reinforced, in this short outlook we may try to survey some more remote and indirect con-

1121 sequences of (H2') and (H2), which *take us far beyond* the details of the argumentation
1122 that is reconstructed in the case study.

1123 (a) In the spirit of the quotation from Devitt and Sterelny (1999) mentioned in Section 1
1124 we reflected upon linguistic theory-formation at a metascientific level. As a result of this
1125 reflection, we showed how a metatheory which may be used to grasp the inference proce-
1126 dures applied in linguistics coherently may work—here demonstrating this metatheory
1127 only in outlines and in operation, without aiming at completeness, and explicating it only
1128 partially and fragmentarily. The metatheory-fragment presented revealed the correlation
1129 between the emergence of contradictions and the mechanism of plausible reasoning in a
1130 successful linguistic theory. The revelation of this correlation did not only have a descrip-
1131 tive function, however, as it also made us realise what a segmental phonologist does when
1132 he argues, reasons, weighs things up and puts forward or rejects hypotheses. The metathe-
1133 oretical reflection may also have a *constructive function*, inasmuch as it may increase the
1134 problem-solving ability of the practicing linguist—in this case by acknowledging the use
1135 of plausible and paraconsistent reasoning in linguistics. Such a metatheoretical reflection
1136 can draw the linguist's attention to a much wider choice of possible solutions to the rele-
1137 vant problem. For example: it may shed light on the productivity of the conscious and
1138 reflected use of plausible inference patterns in linguistic problem-solving; it may make
1139 the linguist aware of the necessity of the development of such heuristics which utilise
1140 the techniques based on plausible reasoning from inconsistent data sets in order to try
1141 to find a solution to linguistic problems which involves the loss of the least amount of
1142 information; it may produce such alternative solutions that the linguist who may not,
1143 or only erroneously, reflect on his own activities at the meta-level takes otherwise no notice
1144 of; and the list can be continued. Therefore we may make the following claim: the 'plau-
1145 sible and supportable' metatheoretical reflection—to remind the reader of the quotation
1146 from Devitt and Sterelny (1999)—which is compatible with the practice of theory-forma-
1147 tion in linguistics, may contribute to the accomplishment of the given scientific tasks that
1148 the linguist faces. (On the same thesis through the example of other metatheories, cf. also
1149 Kertész, 2002a,b and in general Auroux and Kouloughli, 1993).

1150 (b) It is emphasised here that what we examined in this study was not the abstract struc-
1151 ture of the phonological theory, but the argumentational techniques applied in the textual
1152 explication of the theory. *What types of argumentational patterns are allowed by the*
1153 *abstract structure of theories and what types are not* is an essential question which never-
1154 theless emerges. Thus, for example, we know well that subsequent developments in pho-
1155 nology led to the construction of theories different from the type represented in
1156 Wurzel's analysis, and the problem-solving capability of these theories well exceeds the lat-
1157 ter. This is quite easy to track in the changes in how the problem of affricates is treated.
1158 Thus, for example, the contradiction which turned out to be irresolvable in Wurzel's work,
1159 is in fact resolvable by rather simple tools, though their use induces problems of a different
1160 kind (cf. Wiese, 1988, 1996; Prinz and Wiese, 1991; Luschützky, 1992; Dogil and Jessen,
1161 1989 etc.).⁴⁹ We could come to interesting conclusions if we compared the results of our
1162 present study with the argumentational tools that other phonological theories employ
1163 to solve the problem of affricates.

⁴⁹ Surely, we need to *show* this by in-depth case studies concerning further developments. As an immediate continuation of the present paper in this direction let us mention Kertész and Rákosi (in preparation) where the simple tools mentioned are discussed in detail.

1164 (c) It is to be noted though that the resolution of contradictions arising in theories is a
1165 major driving force behind scientific inquiries, a force which *plays a progressive role*.
1166 Therefore to accept an irresolvable contradiction and to reconstruct it with paraconsistent
1167 tools is only a ‘last resort’, that is, it should only be considered as an option if no ray of
1168 hope is to be seen within the confines of the relevant theory. As we showed, on the basis of
1169 the data examined, Wurzel’s analysis may indeed be regarded as a case where all else fails.
1170 Once more, let us illustrate this by a quotation:

1171 [...] *we should not overhastily give up* the requirements of classical logical consistency
1172 as a norm of scientific methodology and turn to paraconsistent logic, lest we lose the
1173 [...] urge to eliminate inconsistencies and, by that, lose an essential motor of scien-
1174 tific change. [...] without the permanent turning up of inconsistencies *and* without
1175 the constant urge to localize and eliminate them, science would stop changing and
1176 come to a standstill. The presence of (weak) inconsistencies seems to be, in fact
1177 and principle, *inevitable* [...] (Fehér, 1990a, p. 234; *emphasis as in the original and*
1178 *added*).

1179 Nevertheless, we must not exclude the possibility of a much more radical stance at the
1180 outset. In particular, further case studies might even show that living with irresolvable
1181 contradictions and reconstructing them with paraconsistent tools is the best we can
1182 achieve in most linguistic theories and that this is the default case rather than the peculiar-
1183 ity of certain extreme approaches.⁵⁰ Such a radical finding would lead, of course, to an
1184 even deeper reevaluation of theory formation in linguistics than the cautious conclusions
1185 we have drawn in the present paper. The question is whether in future one may run the
1186 risk of putting forward metatheoretical analyses justifying such a radical turn.

1187 (d) We know from George Polya’s books that mathematics cannot do without plausible
1188 inferences, either, as these latter have a decisive role in the discovery of theorems and
1189 proofs. By acknowledging this role, Polya made a significant contribution to the develop-
1190 ment of mathematical heuristics and didactics, since he made those aspects of mathemat-
1191 ical problem-solving public which had been considered to be the private matter of
1192 researchers until that time. In linguistics, however—as opposed to mathematics—the com-
1193 ponents and the consequences of plausible reasoning may be present not only in the pro-
1194 cess of discovery but (as we saw through the example of Wurzel’s analysis of affricates)
1195 also in the explication of the theories, therefore their role is more substantial than in math-
1196 ematics. We need to assume that the exploration of the argumentational structure of the-
1197 ories in linguistics, if based on the application of plausible inferences, might make a
1198 significant contribution to the development of the *didactics of linguistics*: it could make
1199 the *heuristics* of linguistic problem-solving teachable. (Such an attempt was made in Ker-
1200 tész, 1993, by drawing examples from the segmental phonology of German).

1201 (e) The case study also illustrates, among other things, that the image that some of the
1202 linguists paint of their own activities by insisting on (H1) without any reflection, is funda-
1203 mentally distorted, since, as we saw, the structure of linguistic argumentation does not
1204 necessarily correspond to the standard view that (H1) represents. This distorted self-image
1205 *causes serious damage*, because it blocks the linguist’s access to several techniques of prob-
1206 lem-solving that are based on plausible inferences and propagates an often destructive

⁵⁰ We are grateful to an anonymous referee for encouraging us to raise this issue.

1207 scale of values which is legitimised with an incorrect—or at least incomplete—view of
1208 science.

1209 (f) By arguing in favour of (H2) as opposed to (H1), we did *not* question either the
1210 rationality of linguistics, or its scientific quality, or its prestige. The modest contribution
1211 we made was merely intended to tighten the gap between the unreflectedly accepted *norms*
1212 and the actual argumentational *practice* of linguistics. Currently, the state of the art view
1213 in the philosophy of science considers the tightening of this gap to be one of the most
1214 important tasks of metascientific reflection. By presenting the metascientific frame out-
1215 lined in Section 2 and through the analysis shown in Section 3 we have pointed out that
1216 the accomplishment of this task is a *real possibility*.

1217 (g) If we realise that basically linguistic theories are not built up according to the con-
1218 straints posed by the standard view of the philosophy of science, but, in the spirit of (H2),
1219 prismatically, cyclically, and through plausible inferences, then we cannot expect to be
1220 able to find a single correct answer to our questions, which we then try to defend by all
1221 possible means.⁵¹ It is not the case that we start inquiry with a set of certain premises from
1222 which we deductively infer true conclusions. Rather, the only thing the linguists can do is
1223 to strive for the continuous, cyclic and prismatic correction of knowledge, taking into con-
1224 sideration the greatest possible amount of plausible assumptions. That view of linguistics,
1225 which follows from (H2), is not compatible with an unreflected and absolutistic treatment
1226 of particular theories, particular points of view, particular methods and theses, and the
1227 unreflected rejection of other points of view. It may, however, lead to the tolerant accep-
1228 tance of the current pluralistic state of linguistics, in which radically different theories
1229 make up a complicated network, and to the conscious utilization of the opportunities that
1230 the current situation offers for the solution of the prevailing problems of linguistics.

1231 Though these perspectives, which we have only made a preliminary characterisation of,
1232 may force us to reassess our metalinguistic thinking at least partially, they might also raise
1233 a number of unsolved problems. These open questions can only be answered if, on the
1234 analogy of the case study presented here, we perform further case studies—that appear
1235 to be typical or, for that matter, extreme cases according to some carefully chosen point
1236 of view—possibly in great numbers, on the basis of which the characteristic and successful
1237 strategies of linguistic problem-solving may crystallise. In this respect, the present paper
1238 does not only supplement our previous studies we have referred to, but is at the same time
1239 a preliminary study to further inquiries whose objective is to explore the argumentational
1240 structure of linguistic theories systematically and to utilize the perspectives gained from
1241 this exploration.

1242 5. Uncited references

1243 Rescher (1993), Walton (1992).

⁵¹ See also Allan (2003, p. 533) on the same issue from a related but different point of view: ‘There are no rational grounds for any human being to claim by right that only one of the possible models of taxonomies of a natural phenomenon is the true one. There may be reasons for preferring one model to any other in a given context, but these reasons will be based upon the perception of its consistency, coherence, efficacy and practical value within that context; in a different context some of these advantages may vanish. Such criteria apply to linguistic models (that is, linguistic theories or theories of language): different models satisfy different sets of conventions and must be evaluated for their superiority in a given context.’

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