1 Introduction
The Main Problem (P)

> I predict a time when . . . people will actually be proud of having emancipated themselves from consistency.
>
> (Wittgenstein 1975: 332)

Overview

The Introduction defines the aims of the book and raises the problems it will deal with. The first aim is that of the *philosopher of linguistics*, namely, to reveal basic characteristics of linguistic theory formation that have been unknown so far and would thus clarify important foundational issues. Second, the book also aims to show how our metatheoretical analyses will provide findings that are capable of substantially improving the practice of problem solving in theoretical linguistics. This aim is that of the *linguist* – however, supported and furthered by the metatheoretical findings of the philosopher of linguistics. In order to reach both aims, the book tackles the problem of how inconsistencies emerge in linguistic theorising, under what conditions they can be tolerated, and how they can be resolved. Since this Main Problem is very complex, we divide it into eight more easily accessible sub-problems, whose solution will in the long run lead, step by step, to the solution of our Main Problem.

It is one of the simplest everyday experiences of everyone interested in linguistics that there are exceptions to the rules, counterexamples against the hypotheses, and background assumptions incompatible with the methodological principles of the theory at issue. From a logical point of view, these experiences are different manifestations of *inconsistency*. Therefore, at the outset, linguistic theorising appears to be burdened with inconsistency in a substantial way. Since, as is widely held, inconsistency is one of *the greatest sins* a scholar can commit, it is striking that so far there has been no metatheoretical framework at our disposal that would account for the emergence and the resolution of inconsistencies in linguistic theorising, and that could explain when and if so, how inconsistency can be tolerated, when it cannot, and if it cannot, why.

The present book is an attempt to fill this gap. Before anticipating what this attempt amounts to, let us briefly clarify what this book is *not*. First of all, the above quotation from one of Wittgenstein's works *must not* be taken to suggest that this book is meant to plead for inconsistency. However, it highlights the need to understand the role inconsistencies play in linguistics and the ways they can be treated. Nevertheless, it will turn out that there are cases in linguistic theorising in which certain inconsistencies are unavoidable and might even be heuristically fruitful.

Second, the book will not analyse linguistic data directly, but rather, it will raise and provide possible solutions to hitherto *unsolved foundational problems* of linguistic theories. We regard it as a contribution to the well-established field referred to as the history and philosophy of science, one of whose subfields is the *history and philosophy of linguistics*. However, as we hope to show, through analysing the structure of linguistic theories from the perspective of the history and philosophy of linguistics, the book might also *improve the research activity of the working linguist* by enhancing the effectiveness of his or her efforts to reveal the nature of language.

Now let us see what the foundational problems mentioned are and why their solutions would be, if they could be obtained at all, of utmost importance.

The standard view of the analytical philosophy of science played a decisive role in shaping our understanding of scientific inquiry in the twentieth century in general and it also influenced the methodology of theoretical linguistics to a substantial extent.[1] It assumes that the principle of non-contradiction in the sense of Aristotelian two-valued logic is the most stable pillar of rational inquiry. The principle of non-contradiction says that no statement can be both true and false at the same time. Inconsistent systems of hypotheses are assumed to be irrational, because from a contradiction any statement can be inferred and therefore, they result in *logical chaos*. Consequently, according to the standard view of the analytical philosophy of science, an inconsistent scientific theory is not able to achieve the primary aim of inquiry insofar as it cannot make rational claims about the world:

> Internal inconsistency of a theory was anathema to the positivists – the mark of irrationality, the complete breakdown of logic and reason. For in standard logic and epistemology … a single inconsistency is logically and epistemically disastrous: an inconsistency anywhere instantly propagates to generate inconsistency everywhere …. Accordingly, for the positivists, and for most traditional logicians and philosophers, consistency was not one constraint on rational inquiry among others, to be balanced in cost-benefit tradeoffs with those others. Rather, it was an absolute, *sine qua non* for rational inquiry. (Nickles 2002: 9; emphasis as in the original)

[1] Section 2.2 will give a brief overview of the main tenets of the standard view of the analytical philosophy of science.

However, if we compare this stance of the standard view of the analytical philosophy of science with the current state of the art in linguistics, we will immediately realise that it is in *sharp contrast with the practice* of theoretical linguistics. The most salient manifestation of inconsistency in linguistics is counterexamples to hypotheses and exceptions to linguistic rules. As a result of the presence of exceptions and counterexamples, which belong to the most typical characteristics of linguistic theorising, *inconsistency appears to be a constitutive property of linguistic theories*. If this is the case, then either the stance of the standard view of the analytical philosophy of science is unrealistic, or linguistic theorising is, in the light of the above quotation, irrational and unscientific. What is even worse, most linguistic theories explicitly or implicitly presuppose the principles of the standard view of the analytical philosophy of science – therefore, at the outset, *their everyday practice is not even compatible with their own methodological background assumptions*.

As is well-known, however, the standard view of the analytical philosophy of science is by now out of date in spite of the circumstance that most linguistic theories have not yet realised this. New developments in the history and philosophy of science have systematically rejected its tenets. This affects the evaluation of inconsistencies in science as well.

Consequently, there are three clashes: one between the norms of the standard view of the analytical philosophy of science and the practice of linguistic theorising; another between the methodological background assumptions and the practice of linguistic theorising; and one between the standard view of the analytical philosophy of science and current re-evaluations of the principle of non-contradiction in the philosophy of science and logic.

Therefore, a *methodological turn* is needed that could provide useable guidelines for the treatment of inconsistencies in linguistic research.

Against this background, the present monograph has two aims. The first aim is that of *the philosopher of linguistics*. Accordingly, we assume that metatheoretical inquiry is an indispensable tool of linguistic research without which object-theoretical research would be built on sand. Considering Devitt and Sterelny's warning seems to be mandatory for every theoretical linguist:

> There is obscurity and controversy not only over the problems for which we need theories of language but also over the status of the theories themselves. This issue of status is highly abstract: it requires a theory of theories of language, a 'meta-theory'. *It would be nice to ignore the meta-theory and get on with the theory, but that is a luxury we cannot afford*. We think that *many mistakes in the theory of language arise from a mistaken meta-theory.* Further, we think that *these mistakes are often facilitated by a failure to be explicit about the meta-theory*: once the implicit meta-theory is exposed, it can be seen to be implausible and unsupportable. (Devitt and Sterelny 1999: 9; emphasis added)

Our metatheoretical analyses will detach linguistic theorising from the prejudices of the standard view of the analytical philosophy of science and shed

fresh light on the way linguistic theorising works. We will try to reveal basic characteristics of linguistic theory formation that have been unknown so far and would thus *clarify foundational issues* of great importance. We will show that linguistic theorising works in a way very different from what linguists themselves assume.

Second, we aim to show how our metatheoretical analyses will provide findings that are capable of substantially *improving the practice of problem solving in theoretical linguistics*. This means that metatheoretical reflection on the process of the emergence and the resolution of inconsistencies in linguistics may contribute to solving linguistic problems and, via this, to increasing the effectiveness of linguistic theorising. Should we reach this aim, our work would highlight the insight that metatheoretical reflection may provide object-scientific research with useful tools. Basically, this aim is that of *the linguist* – however, *supported and furthered* by the metatheoretical findings of *the philosopher of linguistics*.

In order to reach both aims, we raise the Main Problem of the book as follows:

(P) (a) How do inconsistencies emerge in linguistic theorising?
(b) Under what conditions can inconsistencies be tolerated?
(c) How can inconsistencies be resolved?

Should we succeed in answering the questions in (P), we could achieve both aims. On the one hand, revealing the mechanism of the emergence of inconsistencies and the different ways they can be resolved would meet the metatheoretical desideratum. On the other hand, from these findings, suggestions could be inferred that would enrich the working linguist's problem-solving tools with an inventory of the ways in which inconsistencies can be handled systematically and constructively.

Throughout the book, we will motivate our considerations with historical case studies. The reason is that we do not want to argue for our own linguistic position and against that of other linguists. Rather, we intend to *describe and to explain from an unbiased, impartial metatheoretical perspective* how linguistic theories – that have been undoubtedly workable, successful, and influential – proceed. Due to the well-known pluralism of linguistics and the conflicting interests of the social groups propagating particular approaches, analysing the treatment of inconsistency in current theories would inevitably compel us to take sides in present-day theoretical quarrels and would thus blur the metatheoretical issue. Therefore, it seems to be reasonable to make the first step toward the clarification of the nature of inconsistency in linguistics by analysing instructive historical examples in order to distance our analysis from the 'wars' between current linguistic theories. Having thus found an appropriate point of departure, as a later step, the moral of the historical examples can

be applied directly to the evaluation of current theories as well as to the task of dealing with their conflicts.

The Main Problem is very complex and cannot be solved directly. Therefore, we will divide it into a series of more easily accessible problems, whose solution will in the long run lead, step by step, to the solution of our Main Problem. (P)(a) will be subdivided into Problems (P1) and (P2), (P)(b) into Problems (P3) and (P4), and (P)(c) will be subdivided into Problems (P5)–(P8). The route from the first problem to the solution of (P) consists of four parts.

Part I: The State of the Art begins with Chapter 2, in which we ask:

(P1) How does the philosophy of science treat inconsistency in scientific theories?

Then, we will narrow down our overview to the state of the art in linguistics (Chapter 3):

(P2) How does theoretical linguistics treat inconsistency?

The rudimentary solutions to (P1) and (P2) will be useful, because they might point out the direction into which metatheoretical reflection on the nature of inconsistency proceeds today. The insights gained thereby will guide us during the next steps of our reasoning.

These insights will suggest, among others, that one possibility of coming to grips with the problems that inconsistencies raise is the application of some version of paraconsistent logic. Therefore, Chapters 4 and 5 in *Part II: Paraconsistency* will be devoted to this topic. Chapter 4 asks:

(P3) What kinds of inconsistency may be tolerated in linguistic theories and what kinds must not?

It will turn out that in linguistics we have to distinguish between paraconsistency and strong inconsistency. Paraconsistent logics make it possible to retain both of the contradicting statements without the risk of logical chaos. So, whereas strong inconsistency must be excluded from linguistic inquiry, paraconsistency may be tolerated.

Having revealed this distinction, it is straightforward that the next question should be this:

(P4) How can the paraconsistent treatment of inconsistency in linguistic theorising be evaluated?

As an answer to this question, in Chapter 5 we will obtain the characterisation of the prospects and limits of paraconsistency in linguistics. Therefore, *Part III: Plausible Argumentation* should be devoted to the tool by the use of which the shortcomings of paraconsistency can be overcome. Accordingly, in Chapter 6 we will ask:

(P5) Which tool is capable of transgressing the limits of the paraconsistent treatment of inconsistency in linguistic theorising?

The solution to this problem will claim that, as the title of Part III indicates, it is what we will call *the p-model* that may increase our understanding of the mechanism that governs the emergence and the resolution of inconsistencies more effectively than the application of paraconsistent logics.

In the preceding chapters, our insights have been motivated by analysing the argumentation structure of single contributions to linguistic theorising – that is, our investigation was *synchronic*. Therefore, as the next step, the necessity of analysing the process of *theory change* in linguistics presents itself. By using the terms mentioned above, in Chapter 7 we will ask:

(P6) How does the permanent interplay of the emergence and the treatment of inconsistencies contribute to theory change in linguistic inquiry?

Our solution to this problem consists in the extension of the p-model to the historical development of linguistics as triggered by inconsistency.

All the case studies we have analysed in order to obtain our results obviously assume inconsistencies as something 'wrong' that should be avoided. Therefore, the analysis of a theoretical framework that takes a different perspective in that it uses inconsistencies consciously and systematically as its primary research method could provide arguments for or against our findings. In Chapter 8 the next problem is:

(P7) Can the solutions to the problems discussed in Parts II and III be supported by the analysis of a linguistic theory that makes conscious and deliberate use of inconsistencies?

We will obtain an affirmative answer to this question. At this juncture, our train of thought has reached a point where we may draw some of the conclusions inherent in our solutions to the previously discussed problems and ask:

(P8) What heuristics are to be applied in order to cope with inconsistency in linguistic theorising?

Our answer to this question in Chapter 9 will consist of a simple list of argumentation steps that might be carried out in order to cope with inconsistencies in linguistic theorising.

Part IV: Summary will recapitulate our train of thought and infer from them the solution to the Main Problem. We will also highlight that the conscious use of the treatment of inconsistencies along our findings will enrich the problem-solving capacity of linguistics and thus our *meta*theoretical investigations might increase the effectiveness of the *object*-scientific activity of linguistic theorising itself.

Part I

The State of the Art

2 Approaches to Inconsistency in the Philosophy of Science

Overview

This chapter outlines the ways in which the philosophy of science handles the problem of inconsistency in scientific theorising. After raising this problem in Section 2.1, Section 2.2 will summarise the standard view of inconsistency in the analytical philosophy of science (SVI). In Section 2.3, we will touch on the break with the standard view of inconsistency in the analytical philosophy of science as initiated by Kuhn and continued by Lakatos and Laudan. Section 2.4 will discuss the most recent trends that re-evaluate the emergence and the presence of inconsistencies in scientific theorising. Section 2.5 will draw the conclusions that serve as guidelines for the next steps of our train of thought.

2.1 Introduction: The Problem (P1)

In the present chapter, our task is to conduct a brief analysis of the state of the art in the philosophy of science by raising the first sub-problem of our Main Problem:

(P1) How does the philosophy of science treat inconsistency in scientific theories?

Rather than presenting a comprehensive overview of the various schools of the analytical philosophy of science that have contributed, in different ways and to different extents, to the current interest in inconsistency, we will restrict the discussion to a few relevant examples. In this way, we hope to give more emphasis to the particular components of the guidelines we need in order to reach the solution of the Main Problem of the book than a detailed analysis of the state of the art would allow.

Over the past decades, several turns have occurred in the philosophy of science. One of them concerns the evaluation of the emergence of inconsistencies in scientific theories. Relying on the principle of non-contradiction in the Aristotelian and Fregean tradition, the standard view of the analytical

philosophy of science excluded inconsistencies from scientific theories. Nevertheless, the historical turn initiated by Kuhn's (1970) [1962] seminal book on scientific revolutions attributed an important function to inconsistencies in undermining an old paradigm and motivating a new one. Lakatos (1970a), (1970b), who tried to reconcile Popper's and Kuhn's views in order to solve the problem of the demarcation between empirical and non-empirical statements, made further relevant contributions to the clarification of the status of inconsistencies in scientific theorising by relating them to two kinds of heuristics. Laudan (1977) enriched our knowledge of the nature of inconsistencies in science by setting up a rich typology of problems in science. Later, philosophers of science and logic, for example Rescher (1987) and Nickles (2002), realised the need to distinguish between different kinds of inconsistencies, not all of which are harmful. Thus, there are logics available and applicable that tolerate certain kinds of inconsistency without running the risk of logical chaos.

From the overview of these tendencies, the chapter draws important conclusions that might guide our later considerations. Namely, the current state of the art in the philosophy of science seems to suggest that our account to be elaborated in the present book should acknowledge the existence of *different kinds* of inconsistencies that may differ in their *structure* as well as in their *function* and, accordingly, should be *evaluated differently*.

2.2 On the Standard View of Inconsistency in the Philosophy of Science

The principle of non-contradiction has been one of the cornerstones of classical logic since Aristotle:

> *the same attribute cannot at the same time belong and not belong to the same subject and in the same respect*; we must presuppose, to guard against dialectical objections, any further qua lifications which might be added. *This, then, is the most certain of all principles* . . .. For it is impossible for any one to believe the same thing to be and not to be . . .. For what a man says, he does not necessarily believe; and if it is impossible that contrary attributes should belong at the same time to the same subject (the usual qualifications must be presupposed in this premiss too), and if an opinion which contradicts another is contrary to it, obviously it is impossible for the same man at the same time to believe the same thing to be and not to be; for if a man were mistaken on this point he would have contrary opinions at the same time. *It is for this reason that all who are carrying out a demonstration reduce it to this as an ultimate belief; for this is naturally the starting-point even for all the other axioms*. (Aristotle: *Metaphysics* Book IV, Part 3; emphasis added)

To give the reader a first impression of why this is so, let us consider the simple inference in (1). Here and in what follows '→', '∼', '∨', and '&' stand for the

logical constants material implication, negation, alternation, and conjunction, respectively.

(1) Premises:
(a) p
(b) ∼p
Conclusions:
(c) p ∨ q (follows from (a))
(d) q (follows from (b) and (c))

The main reason why inconsistent systems are considered to be unworkable is that from a contradiction any conclusion follows and thus in an inconsistent system of statements any arbitrary statement can be deduced. Gottlob Frege, the pioneer of modern logic, retained the principle of non-contradiction as one of its basic principles. We will call the unrestricted acceptance of the principle of non-contradiction, that is, the strict exclusion of inconsistencies from any kind of systems of statements in the above sense, the standard view of inconsistency.

This view of logic shaped the way the standard view of the analytical philosophy of science treated scientific theories. It is generally assumed that the standard view of the philosophy of science consisted of two main branches, namely, *logical positivism* (whose most prominent figure was Rudolf Carnap and which was based on the *inductive* method) and Popper's (1959) *hypothetico-deductivism*, focusing on *falsification* as the method of testing the hypotheses of scientific theories. In spite of their differences and the debates between their representatives, these two branches have several substantial features in common, and this justifies their subsumption under the label 'standard view'. For example, a recent textbook characterises the standard view of the analytical philosophy of science as follows:

> The two philosophies, logical positivism and Popper's falsificationism, are usually taken together as forming what is known as the classical tradition. Sometimes the term 'positivism' is used. At other times, it is called the *standard* or the orthodox *view*. These latter expressions are apt. (Hung 2014: 311; emphasis added)

The central problem raised by both trends of the standard view of the analytical philosophy of science was that of the demarcation of empirical knowledge from non-empirical, which they called 'metaphysical'. In order to solve this problem, many considerably different attempts were put forward. Thereby, the most important common feature of the solutions is the assumption that there are *criteria of rationality* that any kind of scientific inquiry should meet.

In close connection to this, both branches distinguished between *the context of justification* and *the context of discovery*. The context of justification focuses on the logical reconstruction of the structure of scientific theories and ignores