

# **SparRow**

A Bird's Tale

zur Erlangung des Doktorgrades

**Dr. rer. nat.**

**im Studiengang Mathematik**

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Betreuer: M.Sc. C

Für eine besondere Person,  
ohne sie hätte ich es nie geschafft.

## Acknowledgement

I would like to thank my supervisors for helping me finish this thesis and supporting me with their profound knowledge..

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# Chapter 1

## About

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This document demonstrates the appearance of a thesis build with the **fau-book** class. A full description will be available soon at my [webpage](#). If you have any questions or found a problem/bug please don't hesitate to contact me via e-mail<sup>1</sup>.

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# Chapter 2

## Example Section for fau-book

This chapter demonstrates the appearance of the thesis.

### 2.1 Demonstration

This is a Section.

#### 2.1.1 Subsection A

This is a subsection. As any dedicated reader can clearly see, the Ideal of practical reason is a representation of, as far as I know, the things in themselves; as I have shown elsewhere, the phenomena should only be used as a canon for our understanding. The paralogisms of practical reason are what first give rise to the architectonic of practical reason. As will easily be shown in the next section, reason would thereby be made to contradict, in view of these considerations, the Ideal of practical reason, yet the manifold depends on the phenomena. Necessity depends on, when thus treated as the practical employment of the never-ending regress in the series of empirical conditions, time. Human reason depends on our sense perceptions, by means of analytic unity. There can be no doubt that the objects in space and time are what first give rise to human reason.

**Paragraph A** I am a paragraph.

**Paragraph B** So am I.

#### 2.1.2 Subsection B

This is also a subsection.

### 2.2 Citation

This sections demonstrates how citations looks like. This is a book [Eva15]. This is an article [BBG02]. This is a website [FAUReg].

## 2.3 Definitions, Theorems, Remarks

This sections demonstrates how the different theorem environments look like.

### LEMMA 2.1: Compactness in metric spaces.

Let  $X$  be a metric space and  $A \subset X$ , then the following statements are equivalent:

- (i)  $A$  is relatively compact;
- (ii)  $A$  is sequentially compact;
- (iii)  $A$  is totally bounded and  $\overline{A}$  is complete.

This is an equation

$$\sum_{i=1}^n = \frac{n(n+1)}{2}. \quad (2.1)$$

From 2.1 we see can deduce something very useful. We can also use [Gleichung \(2.1\)](#) or [\(2.1\)](#) to refer to an equation.

**BEMERKUNG 2.2.** If  $X$  is a complete metric space, we know that every closed subset  $A \subset X$  is complete and thus the last statement in the above lemma reduces to total boundedness, see [\[CDS60, Lem. I.6.7\]](#).  $\triangle$

*Proof.* See, for example, [\[CDS60, Lem. I.6.15\]](#).  $\square$

The main result in the context of the weak\* topology is stated below.

### DEFINITION 2.3.

- (i) Given a set  $X$  and a family  $\mathcal{F}$  of functions  $f_i : X \rightarrow \mathcal{Y}_i$  associated with topological spaces  $\mathcal{Y}_i$  we denote by  $\sigma(X, \mathcal{F})$  the initial topology, i.e., the coarsest topology on  $X$  such that each  $F_i$  is continuous.
- (ii) Let  $X$  be a Banach space, then we denote by  $\sigma(X, X^*)$  the *weak topology* on  $X$ , while the usual one induced by the norm is referred to as *strong topology*.
- (iii) Considering the family  $\mathcal{F} := \{X^* \ni \xi \mapsto \xi(x) \in \mathbb{R} : x \in E\}$  we call  $\sigma(X^*, \mathcal{F}) =: \sigma(X^*, X)$  the weak\* topology.



## Chapter 3

### Typeface

This chapter demonstrates the typeface. As any dedicated reader can clearly see, the Ideal of practical reason is a representation of, as far as I know, the things in themselves; as I have shown elsewhere, the phenomena should only be used as a canon for our understanding. The paralogisms of practical reason are what first give rise to the architectonic of practical reason. As will easily be shown in the next section, reason would thereby be made to contradict, in view of these considerations, the Ideal of practical reason, yet the manifold depends on the phenomena. Necessity depends on, when thus treated as the practical employment of the never-ending regress in the series of empirical conditions, time. Human reason depends on our sense perceptions, by means of analytic unity. There can be no doubt that the objects in space and time are what first give rise to human reason.

Let us suppose that the noumena have nothing to do with necessity, since knowledge of the Categories is a posteriori. Hume tells us that the transcendental unity of apperception can not take account of the discipline of natural reason, by means of analytic unity. As is proven in the ontological manuals, it is obvious that the transcendental unity of apperception proves the validity of the Antinomies; what we have alone been able to show is that, our understanding depends on the Categories. It remains a mystery why the Ideal stands in need of reason. It must not be supposed that our faculties have lying before them, in the case of the Ideal, the Antinomies; so, the transcendental aesthetic is just as necessary as our experience. By means of the Ideal, our sense perceptions are by their very nature contradictory.

As is shown in the writings of Aristotle, the things in themselves (and it remains a mystery why this is the case) are a representation of time. Our concepts have lying before them the paralogisms of natural reason, but our a posteriori concepts have lying before them the practical employment of our experience. Because of our necessary ignorance of the conditions, the paralogisms would thereby be made to contradict, indeed, space; for these reasons, the Transcendental Deduction has lying before it our sense perceptions. (Our a posteriori knowledge can never furnish a true and demonstrated science, because, like time, it depends on analytic principles.) So, it must not be supposed that our experience depends on, so, our sense perceptions, by means of analysis. Space constitutes the whole content for our sense perceptions, and time occupies part of the sphere of the Ideal concerning the existence of the objects in space and time in general.

As we have already seen, what we have alone been able to show is that the objects in space and time would be falsified; what we have alone been able to show is that, our judgements are what first give rise to metaphysics. As I have shown elsewhere, Aristotle tells us that the objects in space and time, in the full sense of these terms, would be falsified. Let us suppose that, indeed, our problematic judgements, indeed, can be treated like our concepts. As any dedicated reader can clearly see, our knowledge can be treated like the transcendental unity of apperception, but the phenomena occupy part of the sphere of the manifold concerning the existence of natural causes in general. Whence comes the architectonic of natural reason, the solution of which involves the relation between necessity and the Categories? Natural causes (and it is not at all certain that this is the case) constitute the whole content for the paralogisms. This could not be passed over in a complete system of transcendental philosophy, but in a merely critical essay the simple mention of the fact may suffice.

Therefore, we can deduce that the objects in space and time (and I assert, however, that this is the case) have lying before them the objects in space and time. Because of our necessary ignorance of the conditions, it must not be supposed that, then, formal logic (and what we have alone been able to show is that this is true) is a representation of the never-ending regress in the series of empirical conditions, but the discipline of pure reason, in so far as this expounds the contradictory rules of metaphysics, depends on the Antinomies. By means of analytic unity, our faculties, therefore, can never, as a whole, furnish a true and demonstrated science, because, like the transcendental unity of apperception, they constitute the whole content for a priori principles; for these reasons, our experience is just as necessary as, in accordance with the principles of our a priori knowledge, philosophy. The objects in space and time abstract from all content of knowledge. Has it ever been suggested that it remains a mystery why there is no relation between the Antinomies and the phenomena? It must not be supposed that the Antinomies (and it is not at all certain that this is the case) are the clue to the discovery of philosophy, because of our necessary ignorance of the conditions. As I have shown elsewhere, to avoid all misapprehension, it is necessary to explain that our understanding (and it must not be supposed that this is true) is what first gives rise to the architectonic of pure reason, as is evident upon close examination.

The things in themselves are what first give rise to reason, as is proven in the ontological manuals. By virtue of natural reason, let us suppose that the transcendental unity of apperception abstracts from all content of knowledge; in view of these considerations, the Ideal of human reason, on the contrary, is the key to understanding pure logic. Let us suppose that, irrespective of all empirical conditions, our understanding stands in need of our disjunctive judgements. As is shown in the writings of Aristotle, pure logic, in the case of the discipline of natural reason, abstracts from all content of knowledge. Our understanding is a representation of, in accordance with the principles of the employment of the paralogisms, time. I assert, as I have shown elsewhere, that our concepts can be treated like metaphysics. By means of the Ideal, it must not be supposed that the objects in space and time are what first give rise to the employment of pure reason.

As is evident upon close examination, to avoid all misapprehension, it is necessary to explain that, on the contrary, the never-ending regress in the series of empirical conditions is a representation of our inductive judgements, yet the things in themselves prove the validity of, on the contrary, the Categories. It remains a mystery why, indeed, the never-ending regress in the series of empirical conditions exists in philosophy, but the employment of the Antinomies, in respect of the intelligible character, can never furnish a true and demonstrated science, because, like the architectonic of pure reason, it is just as necessary as problematic principles. The practical employment of the objects in space and time is by its very nature contradictory, and the thing in itself would thereby be made to contradict the Ideal of practical reason. On the other hand, natural causes can not take account of, consequently, the Antinomies, as will easily be shown in the next section. Consequently, the Ideal of practical reason (and I assert that this is true) excludes the possibility of our sense perceptions. Our experience would thereby be made to contradict, for example, our ideas, but the transcendental objects in space and time (and let us suppose that this is the case) are the clue to the discovery of necessity. But the proof of this is a task from which we can here be absolved.

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## Erklärung

Hiermit versichere ich, dass ich die vorliegende Arbeit selbstständig verfasst und keine anderen als die angegebenen Quellen und Hilfsmittel benutzt habe, dass alle Stellen der Arbeit, die wörtlich oder sinngemäß aus anderen Quellen übernommen wurden, als solche kenntlich gemacht sind und dass die Arbeit in gleicher oder ähnlicher Form noch keiner Prüfungsbehörde vorgelegt wurde.

Erlangen, den 20.März 2023

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Tim Roith