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Introduction

Studies in the history of philosophy often analyze philosophers' views in relation to the stage of the exact sciences of their times. While this is common practice in general, for some reason it has never been undertaken for Edmund Husserl (1859–1938), who nevertheless was originally a mathematician.[1] One likely reason for this neglect is a tendency to downplay the role of the exact sciences in Husserl's philosophical views and their development. Yet, discussion of the foundations of these sciences has a central role in all of his published monographs.[2] In this book, I will show this by focusing on *Logical Investigations* (1900–1901), *Ideas Pertaining to a Pure Phenomenology and to a Phenomenological Philosophy I* (1913), *Formal and Transcendental Logic* (1929), and *The Crisis of European Sciences and Transcendental Phenomenology* (1936; only parts of this work were published during Husserl's lifetime). My aim is to show how these works reflect the way in which Husserl's philosophical thought responds to certain developments in the exact sciences from the late nineteenth century to the 1930s.

This has several implications for understanding Husserl's views about science and mathematics. Most importantly, it shows that phenomenology

[1] Edmund Husserl was a mathematician by training, and studied in Berlin with Karl Weierstrass (1815–1897) and Leopold Kronecker (1823–1891). To fulfill his father's wishes and to obtain an Austrian doctorate, he wrote his dissertation on the calculus of variations with Leo Königsberger (1837–1921) in Vienna. After hearing Brentano's lectures in 1884–1888, however, he decided to devote his life to philosophy. But he still engaged in a fair amount of detailed work in mathematics throughout the 1890s. Most of Husserl's writings in mathematics can be dated to 1902 or before, and much of the monograph-length work about his mathematical thought focuses on these early writings (e.g., Miller 1982; Willard 1984; Centrone 2010). There are studies relating Husserl's views on mathematics to the exact sciences of his time (esp. Centrone 2017), but this historical context is typically discussed separately from Husserl's *philosophical* views, and vice versa.

[2] Husserl's views are often regarded in isolation from his context in the sciences and contemporary philosophical debates about them. In this respect, Andrea Staiti's recent monograph (2014) is a welcome contribution. But while he emphasizes Husserl's context in the life sciences, I focus on Husserl's relationship to the exact sciences.

does not aim at a fixed theory but is primarily a method, as is exemplified in Husserl's oft-quoted remark that the philosopher should be prepared to exchange his universalist "large bills" for "small change" analyses. While the exact sciences change even "in the total style of their systematic theory-building and methodology," as Husserl puts it in *Crisis* (p. 4), Husserl's general approach to them nevertheless remains the same from ca. 1898 onward. Obviously, his method develops and becomes more articulate with time, but overall, his style of approaching his subject matter does not radically change.

Husserl's concrete phenomenological analyses yield results too. Think of Husserl's views on the structure of intentionality, time-consciousness, or myriads of other results that can be found in Husserliana. These results show that the unreflected, natural experience is everywhere conditioned by transcendental structures. Thus they show how unreflected naturalism has a transcendentally idealist dimension that is made explicit in transcendental phenomenology. The term "transcendental" in this context derives from Kant's concept, which refers to the conditions of possibility of us having knowledge. It does not refer to what is *transcendent*, that is, beyond our experience; it does not have any mysterious or religious connotations, but describes the way in which our conception of the world is our own achievement in that it is conditioned by certain structures of consciousness. As I will argue in this book, in his approach to mathematics, Husserl interestingly combines this kind of transcendental description with an attempt to describe mathematical practice as it is. The latter makes Husserl's approach to mathematics to be "mathematics-first" – his is not an a priori philosophical view of what mathematicians should do,[3] but an exploration and clarification of mathematics on its own terms, which is a methodological belief that phenomenology shares

[3] Husserl's view of mathematics has been a topic of controversy for some decades. Apart from Gian-Carlo Rota's view of phenomenology as "realistic description" (1997a), commentators typically debate whether Husserl was a platonist or an intuitionist about mathematics (Hill and Rosado Haddock 2000; Tieszen 2004, 2005, 2010, 2011; van Atten 2010, 2015; Hartimo (ed.) 2010; Hill and da Silva 2013; Rosado Haddock 2013). Roger Schmit (1981) has found both platonistic and constructivist moments in Husserl's conception of mathematics. A recent addition to this debate is da Silva's (2017) work, in which he defends a structuralist view of Husserlian philosophy of mathematics. All these approaches interpret Husserl to be advancing universalist claims in one way or the other. Tieszen and da Silva emphasize the importance of practice of mathematics, but nevertheless they, or their Husserl, makes universalist, a priori claims: Tieszen argues that mathematical reality for Husserl is constituted and realist and da Silva defends a structuralist view of it. In contrast, the present work sees phenomenology primarily as a method with which to approach mathematical practice and study mathematicians' commitments. I have myself argued that, thanks to the context-bound nature of Husserl's approach to mathematics, it admits a plurality of approaches (Hartimo 2012).

with certain nonreductive naturalist approaches.[4] But while his approach is "mathematics-first," it is not "philosophy-last-if-at-all."[5] The transcendental clarification enables Husserl to evaluate the practices, not against external standards or measures but against "inner" ones that arise from reflection on these activities. The idea is roughly that as Kant's approach combines empirical realism and transcendental idealism, analogously, the Husserlian phenomenological approach combines a certain kind of nonreductive naturalism with transcendental idealism.[6] Obviously, Husserl's brand of transcendental idealism is greatly modified from its Kantian predecessor, thanks to Husserl's methodological beliefs. Most importantly, Husserl arrives at the transcendental structures by means of intuition instead of deduction.[7] There are exceptions to this – in this work I will show how, despite his view of the nature of the phenomenological method, Husserl also outlines and uses formally defined, a priori theories in his transcendental phenomenological analyses.

The focus on the primacy of the phenomenological method has several advantages. First, it explains how Husserl's philosophical views about exact sciences are dependent on the developments in these sciences. Thus, if his views on science or mathematics seem dated, the reason is not in his philosophical approach but in the state of scientific knowledge that he relies on in his thinking. Second, a clear understanding of his method

[4] One has to be careful about how the term "naturalism" is understood. It is well known that Husserl argues against what are called "methodological" and "metaphysical" naturalism. But there are many forms of "naturalism" on the market, and here I have in mind Husserl's approach to the sciences, which takes science and scientific practice as they are, but in demand of clarification. I discuss Husserl's relationship with various brands of naturalism in more detail in Chapter 1. Furthermore, "mathematics-first" here refers to approaching mathematics as it is; it does not mean that mathematics is somehow more fundamental than philosophy. In that sense, phenomenology obviously comes first to Husserl. This should become clear over the course of the entire book as a whole and especially in Section 8.5.

[5] The terms "philosophy-first" and "philosophy-last-if-at-all" derive from Shapiro (1997).

[6] Tieszen frames his position with a similar comparison to Kant. He defends a position that combines mathematical realism or platonism with transcendental idealism, and thus he arrives at a view termed "constituted realism" (esp. Tieszen 2010, 2011). The present view has been inspired by Tieszen's approach but it follows the textual evidence more closely, especially in its account of Husserl's methodological considerations and the role of *Besinnung* in it. Thus, the present approach is much more detailed about how Husserl draws on the practice of mathematics, sees it as a goal-directed enterprise, is open to different kinds of evidence that are sought for in mathematics, and also aims at moderate revision of these practices.

[7] It is to be noted that Husserl's view of "transcendental" differs from Kant's, especially in his insistence that transcendental conditions can only be described, they cannot be inferred (reminiscent of Frege's recourse to elucidations and Wittgenstein's establishing of the say-show distinction). Furthermore, Husserl's transcendental ego is embodied and embedded, which in the case of mathematics is less prominent than elsewhere and hence has not been given much attention in the present work. For further details, see Hartimo (2019c) and Chapter 8.

enables us to extrapolate from his context and make more educated guesses about what his view today would be. Most importantly, it helps us to surmise how phenomenology could contribute to contemporary philosophy of mathematics.

Even though the primary goal of this book is to explicate Husserl's approach to mathematics as a kind of method and show how he applied it in his major works, the book also contributes to current views about the nature of transcendental phenomenology. This is because Husserl's mathematical writings exemplify his method in a particularly subtle way that helps us to understand certain aspects of phenomenology more clearly (in particular, the way in which phenomenology aims at revision of practices, but also showing how it takes into account theoretical approaches to the same phenomena). This in turn has importance for the way in which, for example, Husserl's transcendental phenomenological philosophy in general is construed.

In my methodological considerations, I will focus primarily on Husserl's 1929 work *Formal and Transcendental Logic* (*FTL*),[8] in which he claims to provide a "definitive clarification of the sense of pure formal mathematics" (*FTL*, 11). In this work, he describes his method as "radical *Besinnung*."[9] In what follows, radical *Besinnung* is understood to be a method with which Husserl approaches the intentional activities of people and, in *FTL* in particular, scientists. *Besinnung* aims to make the goals of intentional activities explicit, and thereby reveal their "sense" [*Sinn*, or sometimes *Zwecksinn*, goal-sense]. In other words, to put it roughly, it is the understanding of an activity in terms of its purpose. For example, understanding a formal theory using *Besinnung* requires us to understand what the mathematicians are trying to achieve with the theory. It is not enough to understand the axioms, their interrelationship, and what follows from them; we must also try to understand what they are for, what is their more general purpose. A simple example from our everyday lifeworld[10] is

[8] Husserl's own evaluation of this work provides additional justification to focus on it and the method described within it. In a letter to Grimme of May 31, 1937, Husserl wrote that he had to study *FTL* regularly, and that he found the work difficult but was generally rather satisfied with it. He claimed that it was his "most mature" work, even though "too concentrated" (Schuhmann 1977, 484–485).

[9] While "*Besinnung*" is an ordinary German word, in *FTL*, Husserl explicitly defines it (*FTL*, 13/9). Having explained the term in the introduction, he concludes: "[s]o much by way of a most general characterization of the aim and method of this essay. It is, accordingly, *an intentional explication [intentionale Explikation] of the proper sense of formal logic*" (14/10). In this book, I take *Besinnung*, as defined in *FTL*, to be the *method* which one uses when giving an "intentional explication" of the proper sense of formal logic. For more, see below and Hartimo (2018b).

[10] "Lifeworld" is Husserl's term for the pregiven world in which we live. Its meaning depends on the context: it may mean the world of our everyday experiences, our immediate surrounding world, the general background of our experiences, the soil on which we stand, the shared culture, etc. (see

cooking: *Besinnung* of certain cooking practices means finding out the sense of the practice, such as whether the aim is to come up with a tasty meal, a healthy meal, a nice-looking meal, or a meal that can be made as quickly and easily as possible. This sense, or better, goal-sense, helps us to evaluate whether our cooking endeavor was successful or not. It also determines the method to be used, that is, whether to cook the meal in the microwave oven, whether to use oil or butter, and so on. In short, *Besinnung* aims at explicit awareness of the purposes and goals of theories, institutions, and practices so that they can be evaluated in terms of how well they manage to fulfill their goals.

When applied to mathematics, this method results in an approach that is in many respects similar to, but also importantly different from, Penelope Maddy's naturalistic method (cf. Maddy 1997, 2007, 2011). Maddy characterizes the naturalistic method as a method that seeks to "identify the goals and evaluate the methods by their relations to those goals" (Maddy 1997, 194). For example, to answer the question of whether mathematicians should search for axioms with which to settle the continuum hypothesis,[11] she analyzes the goals of set theory as opposed to those of group theory and geometry (2007, 351–358). Maddy identifies, for example, one of Cantor's leading goals in developing set theory as being to give as complete as possible an account of sets of real numbers. This goal gives set theorists a prima facie reason to pursue the continuum hypothesis and to search for new axioms with which it could be decided. It led Gödel to propose a so-called axiom of constructibility, which however conflicts with some other axioms that serve the goal of maximality better (Maddy 1997, 194–195; 2007, 358–359). According to Maddy's mathematical naturalism, the development of each mathematical discipline is examined in terms of the goals that that discipline seeks to achieve. In this book, I will argue that Husserl's philosophy of mathematics is indeed reliant on similar analysis of mathematical practice in terms of its goals (indeed, Husserl's view on this particular conflict in the goals of set theory will be discussed in Section 7.4), and hence reliant on a mathematical naturalist methodology. However, Husserl's method is not *reducible* to mathematical naturalism, since he explicates its transcendental dimension (remember, no mystical connotations!) to reflect on it, to

Moran 2012a, 178–217, for a clear exposition of the concept). I have suggested that if a univocal definition should be given to it, it should be understood as "whatever we take for granted" in different situations (Hartimo 2019b).

[11] That is, the hypothesis formulated by Georg Cantor that there is no infinite cardinality between the cardinality of the natural numbers and that of the real numbers. Gödel's formulation of constructible sets (discussed in Section 7.4) was motivated by this goal.

examine its transcendental conditions of possibility; that is, to make the *constitution* of mathematicians' various commitments and goals explicit. These goals (e.g., "definiteness," Husserl's term for completeness, as we will see in Chapter 3) determine what the mathematicians are working toward; that is, what they think the world of mathematics should ideally be like. "Constitution" in phenomenology refers to the way in which we "structure" the world around us as intelligible and meaningful. We are typically unaware of it, and the task of phenomenological description is to make it explicit.

To find out what such goals in the sciences are, Husserl claims, philosophers should enter into a "community of empathy" with scientists and find out the sense of the scientific activity they are engaged in. Thus, Husserl's views about sciences are explicitly context-bound, since much of the time they are about the goals and aims of his contemporaries. This means that one cannot properly understand his views without a detailed account of those with whom he was in a "community of empathy." It explains the lack of mathematical manuscripts in Husserl's later writings, since he thinks of himself as engaged in a collaborative project and philosophizes on the views of his colleagues in mathematics.[12] It also explains why he is not so interested in evaluating, for example, the correctness and consistency of his colleagues' views, but rather in what they are trying to do, in their aims.

Husserl argues that *Besinnung* should be "radical." By this he means that it should be critical: philosophers ought to evaluate scientific activity by finding out whether researchers succeed in *genuinely* (*echt* in German, to use Husserl's own term) realizing their goals, and then further, they should evaluate and renew these goals.[13] In this book, I argue that this kind of revision is partly based on an examination of whether the theories or

[12] Incidentally, his colleague and friend in Göttingen, David Hilbert seemed to reciprocate this view. In his letter to Oskar Becker of July 1918, Hilbert wrote: "In my opinion, mathematics, physics and philosophy form an interconnected scientific system and I have always seen it a part of my life's work especially to cultivate the relationship between mathematics and philosophy" (Hill and da Silva 2013, 391).

[13] I will discuss this in more detail in Chapter 1 but to convince the reader already now that this is indeed Husserl's view, let us quote from Husserl's introduction to *FTL*: "*Radical* sense-investigation [Radikale Besinnung], as such, is at the same time criticism for the sake of original clarification. Here original clarification means shaping the sense anew, not merely filling in a delineation that is already determinate and structurally articulated beforehand. . . . If, as in our case, such clarification is out of the question, then original sense-investigation signifies a combination of determining more precisely the vague indeterminate predelineation, distinguishing the prejudices that derive from associational overlappings, and cancelling those prejudices that conflict with the clear sense-fulfilment—in a word, then: critical discrimination between the genuine and the spurious [Kritik der Echtheit und Unechtheit]" (*FTL*, 14/10).

practices truly realize the goals that they are supposed to reach, as in Maddy. But, crucially, it also makes use of transcendental phenomenology to reflect on the goals and the concepts used. A naturalist who rejects any supernatural entities or "spooks" is probably alarmed about this kind of move. But let me emphasize once more that while transcendental phenomenology as a reflective point of view is not continuous with natural sciences, it *does not* bring any "spooks" into the picture.[14] On the contrary, clarification of these goals brings to the fore all kinds of "idealizing presuppositions" (Husserl's term) of the research, such as the belief that all claims are ultimately either true or false. Thus, transcendental reflection aims at radical questioning of all possible presuppositions adopted in research practice – presuppositions that could count as unexamined "spooks" of the kind that pure-bred naturalists abhor. Husserl does not necessarily want to abolish them, but he thinks we should be aware of them and adopt them knowingly "within limits of their fruitful application" (*FTL*, §80).

The role of transcendental reflection thus distinguishes Husserl's approach from mathematical naturalism: Husserl proceeds to ask transcendental questions about the naturalistically given[15] mathematics. I will thus show how Husserl's phenomenology combines a specific type of naturalism with a kind of Kantian criticism that seeks to answer how the naturalist view of mathematics is possible. Furthermore, this procedure assigns transcendental phenomenology a moderately normative role in Husserl's philosophy.[16] Indeed, I will argue that the combination of *Besinnung* and transcendental phenomenology in his approach to mathematics reveals in detail the sense in which Husserl is a (weak) revisionist and what he means by his claim that philosophers should be "functionaries of mankind" [Funktionäre der Menschheit] (*Crisis*, §7).[17]

[14] Obviously this does not mean that phenomenology and natural sciences are isolated from each other. On the contrary, they should be developed in cooperation; positive sciences may reveal matters that motivate more careful phenomenological description, and vice versa, phenomenological clarification may yield criticism of scientific concepts. For the interdependence of natural sciences and phenomenology more generally, see Zahavi (2017, 156–163).

[15] "Given" is a term Husserl uses for that which appears in different modes of appearance, such as perception, empathy, picturing, signifying, fantasying, and remembering. Some explanation of this frequently used term can be found in Husserl (GP, §§14, 32).

[16] Here I am in agreement with Smaranda Aldea's (2016) recent work. Aldea has shown how Husserl's eidetics serves as a source of criticism in his later work.

[17] Almost throughout *Formal and Transcendental Logic*, Husserl uses the method of *Besinnung* naturally. In the final paragraphs (§§102–105), however, the method is "transcendentalized"; that is, Husserl starts to ask transcendental questions about the method itself. This leads him on to general phenomenological topics such as intersubjectivity and time. Thus, he is also able to talk about "transcendental *Besinnung*." Since the focus of this book is Husserl's philosophy of mathematics, we will stay on a more "natural" level where mathematical activity can be discerned from other intentional activities, and leave the more general phenomenological questions for other treatises.

A correct appreciation of *Besinnung* is also of utmost importance for understanding not only Husserl's philosophy of mathematics but also his late phenomenology in general. Ultimately, it facilitates a general account about *understanding and evaluating goal-directed activities*. It opens the phenomenologist's eyes to the surrounding culture and demands of her a responsibility to engage in a critical evaluation of the activities and practices around her. Thanks to *Besinnung*, phenomenology is not only about being human in the world, but also about being aware and taking responsibility for one's social environment. The task of philosophy thus understood is to explicate and evaluate the normative commitments, the goals and values, that we have inherited from the previous generations. Explicating them brings them "to light," so that we can question them and then choose whether or not to commit to them. Thus, Husserl's universal *Besinnung* demands of a phenomenologist a clear sense of purpose, and the responsibility of shaping one's life so that it is in service of the reflected upon and knowingly chosen goals and values.[18] This leads to a kind of rationalist existentialism, in which the presence gains its importance from the chosen values.[19]

But further development of such an account obviously must be left for another occasion. The main aim of this book is to reveal Husserl's extraordinarily subtle views about mathematics that come to the fore only when his method and the context are seriously taken into consideration.

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The notion of *Besinnung* and its relationship to Husserl's transcendental phenomenology will be explored in detail in Chapter 1. I will argue that Husserl uses *Besinnung* tacitly already in his *Prolegomena to the Logical Investigations* (1900) and that it is embedded in his idea of a "division of labor" between mathematicians and philosophers. I will then examine the development of Husserl's methodology from *Prolegomena* via *Ideas I* (1913) and *Ideas II* to *Formal and Transcendental Logic* (1929), in which *Besinnung* is explicitly introduced as the method used. I will argue that *Besinnung* is a method with which to capture *mathematicians' theoretical attitude*, which is

[18] See Heinämaa (2020) for this account of values.

[19] For an account, see Heffernan's unpublished manuscript on *Universale Besinnung-Selbstbesinnung-Weltbesinnung*. I agree with Heffernan that Husserl's late interest in so-called limit phenomena (i.e., questions concerning God, freedom, and immortality) "is not a turn away from phenomenology and toward metaphysics. It is, rather, an integral and organic part of his long-range plan to clarify transcendentally- phenomenologically the situation of the whole human being in the entire cosmos" (p. 5).

a species of *natural attitude*. The natural attitude is our usual, naïve attitude toward the world prior to raising transcendental philosophical questions about it. I argue that Husserl's description of mathematicians' theoretical attitude is tantamount to a mathematical naturalist's account of it.

In what Husserl calls "*epoché*," the natural attitude is overcome. This is sometimes understood to mean that when the phenomenologist enters the new domain of transcendental phenomenology, the world of the natural attitude is somehow abandoned. In this book, I take as a starting point the view, already argued for by numerous phenomenologists (e.g., Luft 1998, Sokolowski 2000, Zahavi 2003, Staiti 2014, to mention but a few), that, in contrast, the *epoché* and the phenomenological reductions connected to it enable us to *discover* and investigate the natural attitude. The *epoché* and the phenomenological reductions shift our focus to the *way* in which our natural attitude acts and the objects of these acts are given to us.[20] The *epoché* thus moves us into a reflective point of view, from which we can examine our first order acts and the givenness of their objects. This is what is meant when phenomenology is defined to be a study of *correlation*, that is, how the objective is correlated to the subject.

All this is well known in contemporary phenomenology and discussed in numerous introductions to the discipline.[21] The novelty of the view presented in this book is the claim that we need *Besinnung* to understand the natural theoretical activities of other people in terms of what they are trying to do. In other words, philosophers need it to find out what mathematicians are up to. The outcome of (natural) *Besinnung* is Husserl's account of formal logic presented in the first part of *Formal and Transcendental Logic*. This is then examined transcendentally with what he calls "transcendental logic." Whereas Husserl's move to the transcendental attitude takes place in more or less one blow in the *epoché* and the phenomenological reduction – this is the Cartesian way to the reduction as discussed, for example in *Ideas I* – in *FTL*, he progresses toward it in a more step-by-step fashion, starting with an

[20] For example, in the words of Robert Sokolowski: "Philosophy begins when we take up a new stance toward our natural attitude and all its involvements. When we engage in philosophy, we stand back and contemplate what it is to be truthful and to achieve evidence. We contemplate the natural attitude, and hence we take up a viewpoint outside it. This move of standing back is done through the transcendental reduction. Instead of being simply concerned with objects and their features, we think about the correlation between the things being disclosed and the dative to whom they are manifested. Within the transcendental reductions, we also carry out an eidetic reduction and express structures that hold not just for ourselves, but for every subjectivity that is engaged in evidencing and truth" (2000, 186).

[21] See, for example, Sokolowski (2000) and Zahavi (2003) for book-length introductions in English. Among the shorter English-language introductions my favorites are Klaus Held's (2003 [1985]) classic and more recently Dermot Moran's (2018) essay.

investigation into the presuppositions and evidences of formal logic. Transcendental logic thus provides a reflective and critical standpoint to the naturalistically and historically given formal logic, as will be properly discussed in Chapters 5 and 8.

In Chapter 2, I will discuss the relationship between logicism and the phenomenological approach to mathematics. I will do this by drawing from Husserl's early criticism of Frege. In his *Philosophy of Arithmetic* (1891), Husserl criticized the logicist projects, and among them Frege's approach, for offering needless and artificial definitions of notions such as equivalence and number. Frege then reviewed Husserl's work in turn. His review has raised a debate as to whether it had an influence on Husserl's putative turn away from psychologism. Instead of following Frege and most commentators in construing the disagreement between him and Husserl as being about psychologism, I will cast it as one about logicism. I will argue that, to confront Frege's criticism, Husserl established the division of labor between mathematics and philosophy. With the hindsight of Husserl's understanding of the correlation – the way in which the subjective and objective are correlated (discussed in Chapter 1) – Husserl's approach to logicism can now be understood to boil down to a view that logicism uses formal and artificial, instead of philosophical, methods to analyze its notions. Logicism thus fails to provide insight into the essence of mathematics. Furthermore, logicism assumes wrong primitive notions (that are not "mathematics-first," that is, not the ones that are primitive in the natural practice of mathematics).

Chapter 3 discusses Husserl's early structuralism. This will bring the notion of "definiteness" into focus: Husserl's term for the completeness of axiomatic theories. With this concept Husserl seeks to clarify the sense of pure mathematics. He thinks that it gives a concrete formulation to a goal that has implicitly guided mathematicians since Euclid. In this respect his views on mathematics mirror the more general trend toward abstraction in modern mathematics and are very close to those of his colleagues, especially David Hilbert.

Husserl worked in Halle from 1887 until 1901, where he discussed mathematics with colleagues, in particular Georg Cantor.[22] In 1901, he moved to Göttingen, against the wishes of the philosophers there, but in line with the hopes of the mathematicians.[23] At the time Göttingen was the

[22] For example, the two had discussed what is now known as the Schröder-Bernstein theorem (Schuhmann 1977, 52).

[23] In Göttingen, Husserl had collegial relationships with the mathematicians rather than the philosophers. The philosophical faculty initially opposed Husserl's appointment in 1900; the two ordinary professors in philosophy, Georg Elias Müller and Julius Baumann, as well as the university