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Georg Cantor and Rudolf Steiner*

Georg Cantor (1845-1918) is above all recognized as one of the most important mathematicians of the 19th century, single-handedly founding and formulating set theory – in particular the theory of transfinite numbers.¹ Cantor's interests, however, extended far beyond the field of pure mathematics. He was substantially involved in the founding of the German Mathematicians Association in 1890, and its first president until 1893; and in connection with his research on the topic of mathematical infinity he became deeply occupied with philosophical issues.² Furthermore, he worked with great intensity on theological and literary-historical problems. However, in his principal area of research – set theory and the transfinite numbers – he certainly wasn't accorded any immediate understanding, having instead to battle against the incomprehension and mistrust of many of his contemporaries both orally and in writing.

Cantor also began an analysis of the so-called Shakespeare-Bacon Theory in the 1880s. For an inquisitive and active contemporary it was not unusual to occupy oneself with a problem of this kind. This theory specifically called into question the authorship of Shakespeare's dramas and poems. An advocate of this theory sought to demonstrate that the person known to us as the actor from Stratford – William Shakespeare (1564-1616) – a man otherwise barely provable from the documents available to us, could not have been the author of the works attributed to him. Instead there come into consideration a number of other writers originating from the higher educated and/or society circles. Many supporters of this view consider the philosopher and statesman Francis Bacon (1561-1626) to have been the author, believing only he alone possessed enough erudition and learning to write the dramas in question.³

* This essay first appeared in German in the *Beiträge zur Rudolf Steiner Gesamtausgabe*, nos. 114/115 (Dornach/Switzerland: Rudolf Steiner Verlag, 1995) pp. 53-61. The original German text may be found on the author's website, Renatus Ziegler: Reines Denken (see link: <http://www.reinesdenken.ch/index.php?id=423>). It appeared in an English translation (by David W. Wood) in the March 2000 issue of the Newsletter of the Science Group of the Anthroposophical Society in Great Britain.

¹ For biographies of Cantor see: Walter Purkert/Hans Joachim Ilgands, *Georg Cantor 1845-1918* (Basel/Boston/Stuttgart, 1987); Andor Kertész, *Georg Cantor 1845-1918, Schöpfer der Mengenlehre* (Halle/Saale: Deutsche Akademie der Naturforscher 1983; Acta Historica Leopoldina, No.15); Herbert Meschkowski, *Georg Cantor, Leben, Werk und Wirkung*. Mannheim/Wien/Zürich: Bibliographisches Institut 1983.

² See Joseph Dauben, *Georg Cantor: His Mathematics and Philosophy of the Infinite* (Cambridge: Harvard University Press 1979); Hans Bandmann, *Die Unendlichkeit des Seins: Cantors transfinite Mengenlehre und ihre metaphysischen Wurzeln* (Frankfurt am Main: Peter Lang 1992; Studia Philosophica et Historica, Volume 18).

³ Cf. Purkert/Ilgands (cf. footnote 1 above), pp. 82-92 and in particular for what follows, see the informative essay by Hans Joachim Ilgands, "Zur Biographie von Georg Cantor: Georg Cantor und die Bacon-Shakespeare Theorie", *NTM-Schriftenreihe für Geschichte der Naturwissenschaften, Technik und Medizin*, Volume 19, 1982, Booklet 2, pp. 31-49. Concerning the Shakespeare-Bacon Theory, see especially R. P. Wülker, "Die Shakespeare-Bacon-Theorie", *Berichte über die Verhandlungen der Königlich-Sächsischen Gesellschaft der Wissenschaften zu Leipzig*. Philologisch-historische Classe, 1889, IV, pp. 217-300.

Written remarks from Cantor on the Shakespeare problem first appear after the middle of the 1890s. He proved himself thoroughly at home in the relevant primary and secondary literature. In dealing with this problem he also exhibited his customary thoroughness, vehemence and force of conviction, and just like the opponents of the Shakespeare-Bacon theory, he too did not refrain from expressing himself polemically at times.

During this period he also ventured to speak publicly about the results of his research, both in general public lectures and in meetings of local societies. However, it is evident that Cantor had difficulties finding open ears and willing publishers for his oral presentations and written compositions. These difficulties form the background to his meeting with Rudolf Steiner in Berlin. A source of information about this meeting is a letter Cantor wrote from Berlin to his son Erich on the 1st February 1900:

“[...] The purpose of my somewhat longer stay here is a very important one, and it appears as if I’ve finally achieved it; in two, or three days at most, I shall be home again. As you are aware for a long time now I’ve been seeking a *channel* – and one without cost – to bring my Shakespeare research before the learned public. This will allow my findings to be *examined*, and whatever is of any good to be of some value to humanity. You know of the many *fruitless* and rather expensive attempts that I have had to undertake to reach this goal. Just consider the number of rejections I’ve received from publishers, editors, etc. etc. That is, I sought a *channel* [Kanal] but have until now only encountered *scoundrels* [Kanailen], who treated me with scorn. Arrogant fellows and idiots, who know nothing of my work and would not assist me, all because of the *learned cliques* whose theory I oppose; who with their inflated appearances and long guarded, antiquated ways, are comparable to that notorious wall which has surrounded the *Chinese empire* for *millennia*.

Through the writer *Eugen Reichel*, whom I visited the day before yesterday, I have now become acquainted with the editor of the *Magazin für Literatur* – Dr. *Rudolf Steiner*, an Austrian. He is engaged by the Free Literary Society, which he directs, and whose mouthpiece is the *above-mentioned academic journal*.

For 10 years Steiner worked in Weimar as the joint-editor of the new edition of *Goethe’s works* – specifically the *natural scientific* part. He is a *natural scientific researcher* and *philosopher* by profession. And just like Husserl with regard to mathematics, Steiner began with physics and has now become a philosopher and literate.

I visited him today in *Friedenau*; he is a young man of approximately 37 years of age. But the main point: He is independent of the ruling clique; regarding the Shakespeare-problem, *he is on my side*, and most importantly, he was *delighted* to accept my essays for his journal. *To begin with*, the essay I recently delivered before the *Thuringia-Saxony Society*, the very one the *Halle* and *Saale newspapers* would not print because their editors *believed it their duty to uphold the old Shakespeare fable*. [...]

I am very happy to have found Dr. *Steiner*, a splendid man, refined soul, noble character etc. etc. [...].⁴

The writer *Eugen Reichel* (1853-1916) was a regular co-worker for the journal the *Magazin für Litteratur* – and had also intensively concerned himself with the Shakespeare-Bacon problem (see further below). In July 1897 Rudolf Steiner took over the editorship of the *Magazin* together with Otto Erich Hartleben (1864-1905). He then held the position by himself for a while, until his resignation in September 1900. The *Magazin für Litteratur* was

⁴ *Georg Cantor, Briefe*, Herbert Meschkowski/Winfried Nilson eds., (Berlin/Heidelberg: Springer, 1991), Letter no.168, pp. 423-424.

also the organ of the Free Literary Society to whose committee Steiner was elected. Rudolf Steiner comments on this in his autobiography *Mein Lebensgang* (The Course Of My Life):

“I could only take over the journal if I additionally imposed on myself an activity which seemed likely to increase its circle of subscribers. – This was the activity in the Free Literary Society. I had to so arrange the content of the journal that the society received its due. [...] It also fell to me to give lectures in this society, in order that the mediation of the spiritual life to be given through the *Magazin* could also be personally brought to expression.”⁵

As may be gathered from the further explanations given by Steiner in *The Course Of My Life*, he was indeed commissioned to work in an independent manner within the Free Literary Society, but was neither an employee of it, nor its ‘director’. And as Steiner himself had foreseen, difficulties soon arose that eventually led to him renouncing the editorship.⁶ As for Rudolf Steiner’s work in Weimar on Goethe, he had collaborated with Bernard Suphan on the volumes, ‘On Morphology’ (Volume II.6, 1891; II.7, 1892; II.8, 1893), ‘On Natural Science in General, Mineralogy and Geology’ (Volume II.9, 1892; II.10, 1894) as well as ‘On Natural Science, General Theory of Nature’ (Volume II.11, 1893; II.12, 1896). – See ‘Section II: Goethe’s Natural Scientific Writings’ of *Goethe’s works, published under the commission of the Grand Duchess of Saxony* (Weimar Edition or Sophie-Edition; Weimar Böhlau 1887-1919).

Whether Steiner was actually on Cantor’s side with regard to the Shakespeare problem will be looked at later. In any event, Cantor’s euphoric sounding characterizations of Steiner are presumably because he believed he had (finally) found in Steiner a potential editor to publish his essays on the Shakespeare-Bacon problem. In fact, not long after, Cantor sent the manuscript of an essay to Steiner. Reports of two lectures on this theme given by Cantor in Leipzig shortly before on the 28th of November 1899 and the 5th of December 1899 can be found in the newspaper *Leipziger Tagblatt und Anzeiger*.⁷

On the 7th of February 1900, Cantor wrote to Steiner from Halle on the Saale, Händelstrasse 13:

“Dear Sir,

Please find enclosed the completed first essay for your journal, which I now take the liberty of sending to you. *Hopefully it is possible* to print the article, which has become somewhat longer, *in one and the same number*. The following article comprises the *second part* of the *commenced first chapter*. When can you make use of the second article?

I believe my work will not fail to have repercussions on the Shakespeareologists’ struggle. You will notice I hold the fundamental principle of *speaking candidly; for a severe approach is necessary* when dealing with *philologists*.

With best wishes to you and your wife,

Yours faithfully, Georg Cantor.

P.S. Yesterday my colleague *Vaihinger* lent me his copy of your book on *Nietzsche*, which greatly interests me. I also hope to find here among my

⁵ R. Steiner, *The Course of My Life* (GA 28; 340ff).

⁶ See Steiner’s lecture of October 27, 1918 in Dornach on “Brief reflections on the publication of the new edition of the ‘The Philosophy of Freedom’”. In: *From Symptom to Reality in Modern History* (GA 185), (Rudolf Steiner Press, London, 1976).

⁷ Ilgands (cf. footnote 3 above), pp. 39-40. *ibid.* An editorial comment to Cantor’s article in the Saale newspaper is quoted on p.39, where the negative attitude of this newspaper to the Shakespeare-Bacon theory is evident.

acquaintances some of your other publications in order to study them some time.”⁸

The essay in question appeared in the *Magazin für Litteratur* under the title, “Shakespeareology and Baconianism; Historical-Critical Contributions to the Solution of the Shakespeare problem” (no.8, 1900, columns 196-203).⁹ Steiner had therefore complied with the request for publication in the same number. However, a continuation of the commenced series of articles never appeared.¹⁰

The philosopher, *Hans Vaihinger* (1852-1933), a Kant and Nietzsche scholar, founder of the *Kantstudien* (1897), as well as the Kant Society (1904), was Cantor’s professorial colleague in Halle. He is best known for his principal work, *The Philosophy of As-If; System of Theoretical, Practical and Religious Fictions of Humanity on the basis of Idealistic Positivism; with an appendix on Kant and Nietzsche* (Berlin, 1911), in which all values and ideals are presented as fictions of humanity. The Nietzsche book of Steiner mentioned by Cantor: *Nietzsche, ein Kämpfer gegen seine Zeit* (Weimar: Emil Felber 1895; GA 5) [published in English under the title *Friedrich Nietzsche, Fighter for Freedom.*]

Not long after on the 13th of February 1900, Cantor again wrote to Steiner from Halle on the Saale, Händelstrasse 13:

“Honoured Doctor. By now you would have received my manuscript ‘Shakespeareology and Baconianism’. I would be grateful if you could tell me when the printing of this first article will *roughly* take place. I would also like to make (this is hopefully self-explanatory?) *a correction to the copy*. I’ve noticed an error; regarding the ‘Sammler-Hypothese’, *George Chalmers* (1742-1825) should be credited as the author, *not Boader*; and a few other minor things could be improved upon.

I’ve received an offer from a publisher in Offenbach to write a more substantial work on the Shakespeare problem. With regard to that I will wait until my three articles have appeared in your magazine. Today I received the printing material for ‘College Pedagogy’ from Dr. H. Schmidkunz; in any case, many thanks for the stimulus I have received from you. Could you also please give my regards to Privy Councillor Förster.

Respectfully yours, Georg Cantor.”¹¹

The correction indicated by Cantor was carried out. It is unknown whether Steiner sent Cantor page proofs, but this is most unlikely since Cantor’s article appeared on the 24th of February 1900. This article was the final work that Cantor did on the Shakespeare-Bacon problem; both a continuation of the article as well as a more detailed treatment failed to eventuate.

The philosopher and educator Hans Schmidkunz (1863-1934) was the secretary of the Association for College Pedagogy¹² founded in 1898. In the association’s¹³ first lecture-series

⁸ Archive of the Rudolf Steiner-Nachlassverwaltung, Department: Letters to Rudolf Steiner.

⁹ The original German title of Cantor’s article is: ‘Shakespeareologie und Baconianismus; Historisch-kritische Beiträge zur Lösung der Shakespearefrage’.

¹⁰ For an analysis of Cantor’s article, see Ilgauds (cf. footnote 3 above), pp. 40-43.

¹¹ Archive of the Rudolf Steiner-Nachlassverwaltung, Department: Letters to Rudolf Steiner.

¹² In German: Verband für Hochschulpädagogik. Cf. Walter Kugler, “Rudolf Steiners frühe Vortragstätigkeit im Spiegel der zeitgenössischen Presse II, Berlin 1899-1903” in *Beiträge zur Rudolf Steiner Gesamtausgabe* no. 101 (1988; pp.53-71).

¹³ See R. Steiner’s report, “Schule und Hochschule”, in the *Magazin für Litteratur*, 1898, nos. 49 and 50 (GA 31; pp.289-301, 660).- Also see the announcement of this series of lectures as well as the exposition, “Ziele der Hochschulpädagogischen Bewegung”, in the *Mitteilungen zur Hochschulpädagogik* (issue no.1), edited by Hans Schmidkunz for the Verband für Hochschulpädagogik.

he presented a talk on the 28th November 1898 entitled, “College-Pedagogy”; with Steiner giving a lecture on the 12th December 1898 called, “College Pedagogy and Public Life”.¹⁴

The Privy Councillor mentioned by Cantor is Wilhelm Julius Förster (1832-1921), who was an astronomer at the Imperial Urania-Observatory in Berlin. Förster was also president and co-founder with Hans Schmidkunz of the Association for College Pedagogy to which Steiner also belonged. In the above mentioned lecture-series he spoke on the 21st of November 1898 on: “School and College in the light of recent life conditions”.¹⁵

We will now look into the question why Steiner accepted Cantor’s highly polemical essay for publication in the *Magazin für Litteratur*. Cantor’s prospects for publication in the *Magazin* presumably effectively ended after Steiner’s departure. Steiner’s own attitude to the Shakespeare-Bacon theory seems to have been neither an explicit embracing of it, nor a whole-hearted rejection. The only two statements known to me in Steiner’s written works are reviews on the work of other researchers on this problem. In an obituary of Wilhelm Preyer (1841-1897), a professor of physiology and psychology in Jena, Steiner mentions a few of Preyer’s unusual objects of investigation:

“He especially liked to immerse himself in the fledgling areas of science. Hypnotism, graphology, the question as to whether Bacon was the author of Shakespeare’s dramas, occupied his time and inspired him to write books and essays that are of value and are original, despite the fact their contents evoked considerable doubt. Things which appeared so absurd to many people that they would not even seriously discuss them, became the object of Preyer’s work and thought.”¹⁶

In another connection in 1900, Steiner speaks about Eugen Reichel, an author intimately known to him. He says:

“Reichel is of the opinion that the profundity in Shakespeare’s dramas and the ‘Novum Organum’ of Bacon of Verulam, reveal a powerful and brilliant personality, equally great as poet and thinker, yet who had died in obscurity without being understood by the world. [...] Bacon of Verulam was the bungling and amateurish character in question. He appropriated the unpublished works of this forgotten genius, ‘re-worked’ them in the manner indicated above; then using his own name presented to his contemporaries and posterity the philosophical writings, while the dramatic works were published under the name of the Stratford actor Shakespeare.”¹⁷

Steiner is here referring to a book by Eugen Reichel that is also present in his personal library: *Shakespeare Litteratur* (Stuttgart: Adolf Bonz & Comp. 1887). In the table of contents there appears amongst others the following headings – ‘Who wrote the ‘Novum Organum’ of Francis Bacon?’, ‘Shakespeare’s literary estate’, and ‘Shakespeare’s Dramas’. After the passage cited above Steiner adds: “I myself am still unable to come to any sort of conclusion regarding this difficult problem – a problem to which Reichel devoted so much of

¹⁴ Steiner published in a leaflet a short written version of this lecture “Hochschulpädagogik und öffentliches Leben”, (GA 31; pp.661-663). A longer version appeared under the title, “Hochschule und öffentliches Leben”, in the *Magazin für Litteratur*, 1898, nos. 50 and 51 (GA 31; pp. 301-314). – On the subject of college pedagogy, also consult the following essays by Steiner: “Der Universitätsunterricht und die Erfordernisse der Gegenwart”, in the *Magazin für Litteratur*, 1898, no. 19 (GA 31; pp. 235-239); “Über den Lehrfreimut”, *Magazin für Litteratur*, 1899, no. 11 (GA 31; pp. 327-329); “Collegium Logicum”, *Magazin für Litteratur*, 1899, no. 12 (GA 31; pp. 337-341).

¹⁵ Steiner reports extensively on this lecture in, ‘Schule und Hochschule’, (Note 11). Also see the autobiographical remark by Steiner in the lecture of May 18, 1919 (GA 192; pp.106-7).

¹⁶ *Magazin für Litteratur*, no. 30, 1897; reprinted in: R. Steiner, GA 30, p. 347.

¹⁷ *Magazin für Litteratur*, no. 24, 1900; GA 29, pp. 389-390.

his energy.”¹⁸

Steiner’s general view with respect to the publication of Cantor’s work seems to be that of trying to give voice to as many different opinions on a subject as possible. For as he writes in the *Dramaturgische Blätter* (no. 36, 1898) – a supplement to the *Magazin für Litteratur* – “It is my conviction that it is the duty of an editor of a literary journal to allow many diverse standpoints to be expressed on a matter.”¹⁹ The extent to which Steiner tried to remain independent of the various prevailing views can perhaps be seen in the obituary of the Anglican Friedrich August Leo (1820-1898): “On the 30th of June a man passed away who accomplished a great deal for Shakespeare scholarship – Professor Dr. Leo – one of the co-founders of the German Shakespeare Society and long-time publisher of the Shakespeare Yearbook.”²⁰ Yet in the *Jahrbuch der Deutschen Shakespeare-Gesellschaft* (1885, pp.190-227), in a very cutting and attacking article entitled: “The Bacon-Society; together with a few comments on the Bacon-Shakespeare Affair”, this very same Professor Leo had also expressed a few highly scathing criticisms of the supporters of the Bacon-Shakespeare theory. Cantor naturally felt himself included among those attacked and correspondingly replied to Leo’s criticism.²¹

Perhaps also interesting in this regard are a few of Steiner’s comments on Shakespeare which *don’t* explicitly relate to the authorship of Shakespeare’s dramas, but may shed light on his attitude and view of Shakespeare as a person. In an article called: “Also a Shakespeare Secret” (*Dramaturgische Blätter*, no.30, 1898), Steiner writes:

“I believe that the most suitable words to describe Shakespeare’s world view are expressed when we say: The world is a drama for him. By dint of his nature he views all things with a certain theatrical effect. Whether they reflect typical fundamental forms, or hang together morally, or whether they express something mysterious – are all of no consequence to him. [...] I hope my article is not interpreted as if I am accusing Shakespeare of being superficial. He delves into all one-sidedness with a certain brilliant intuitiveness, yet doesn’t become embroiled in any one-sidedness himself. He transforms himself from one character into another. Shakespeare is an actor with the whole of his being – and therefore the most effective dramatist.”²²

In addition, in an essay called, “Dr. Wüllner as Othello”, in the journal *Deutschland* (no. 335, 1896, p. 2), Steiner reviews a touring show playing at the Hoftheater in Weimar. The review begins with the words:

“A happy, illuminating experience can be enjoyed by one, who realizes that the greatness of Shakespeare’s plays can be explained by the fact that their poet was an actor. However, it is not of importance to know that this poet was professionally trained in acting, but to realize he possessed an actor nature as a fundamental trait in his personality. It belongs to the very essence of such a nature that they can, with the total denial of their own personality, immerse themselves in a foreign character. Hence, the actor renounces being himself. He is now given the possibility of speaking forth out of a foreign being. The more he is flexible and capable of transformation, the more he is an actor. There is deep and symbolic meaning in the fact that we know next to nothing about Shakespeare as a person. How does he relate to us? For he doesn’t speak to us as a person, rather, he speaks to us out of his roles. He is the true

¹⁸ Ibid.

¹⁹ R. Steiner, GA 29, p. 141.

²⁰ *Magazin für Litteratur*, no. 27, 1898; GA 32; p.442.

²¹ Cf. Ilgauds (see footnote 3 above), p. 33 and pp. 43-46.

²² R. Steiner, GA 29, pp. 139-140.

chameleon. He speaks to us as Hamlet, as Lear, as Othello. Shakespeare even acts out theatre while writing his plays. He no longer senses what is going on in his own soul while creating the figures of his dramas. Because Shakespeare himself was so wholly an actor, only genuine actors are able to perform his plays.”²³

An exchange between Cantor and Steiner on philosophical or mathematical topics does not appear to have taken place. With the dedication, “Halle on the Saale/4th Febr. 1900/Rudolf Steiner in Berlin, Best wishes, yours sincerely, the author”, Cantor sent to Steiner, with handwritten corrections affixed, his work *Zur Lehre vom Transfiniten; Gesammelte Abhandlungen aus der Zeitschrift für Philosophie und Philosophische Kritik. Erste Abtheilung* (On the Theory of Transfinites; Collected Papers from the Journal for Philosophy and Philosophical Criticism. Part One [all that appeared]. Halle-Saale: Pfeffer 1890). There seems to have been no immediate reply from Steiner. The volume contained the two essays, “On the various standpoints in relation to the actual infinite”²⁴ and “Discussions on the Theory of Transfinites”.²⁵

As far as I’m aware Steiner never explicitly mentions Cantor, neither in his written works, nor in the extant lectures. On the other hand, apart from Cantor’s reading of his Nietzsche-book (letter dated 7th February 1900), there also appears to be no concrete indication that Cantor occupied himself with Steiner’s work.²⁶ There is only one indirect indication of Steiner’s acquaintance with the fundamental concepts of Cantorian set theory, and this is in answer to a question, after a lecture on the 15th October, 1920:

“If one has no sense for reality, then having only mathematical formulae and mathematical methods at your disposal you may calculate in the most brilliant manner into space and time, and thus obtain the most dreadful abstractions here.

Often these abstractions have something extremely seductive about them. We need only call to mind modern set theory, which is used, is it not, as a basis for explanations of the infinite. There you have a dissolution of the mathematical principle itself, a dissolution of number itself, insofar as number is no longer taken in its ordinary meaning, but rather, a set is compared to another set. One disregards the qualities and ordering of the individual elements and only considers the relation they may have with one another. It is then possible to develop certain theories of the infinite. However one continually swims in abstractions, because in concrete reality it is impossible to carry out these things.

Now it is of great significance that one has gradually become accustomed to refraining from this immersion in reality. You see in this regard Spiritual Science must certainly rectify many things. I have presented you with two contrasts. It may appear as if all these things have nothing to do with the theory, but in reality they have very much to do with it. For with all these things we are not just dealing with a theory that will bring about its own correction when a sound approach to thinking is present, but

²³ R. Steiner, GA 29; p. 399.

²⁴ “Über die verschiedenen Standpunkte in Bezug auf das aktuelle Unendliche” in the *Zeitschrift für Philosophie und Philosophische Kritik*, Volume 88, 1886, pp. 224-233. Republished in Georg Cantor, *Gesammelte Abhandlungen mathematischen und philosophischen Inhalts* (edited by E. Zermelo), Berlin: Springer 1932 (Reprints: Hildesheim, Olms 1966 and Berlin/Heidelberg/New York, Springer 1980), pp. 370-376.

²⁵ “Mitteilungen zur Lehre vom Transfiniten” in the *Zeitschrift für Philosophie und Philosophische Kritik*, volume 91, 1887, pp. 81-125, 252-270; volume 92, 1888, pp. 240-265. Republished *ibid.* (Note 15), pp. 378-439.

²⁶ The editors of Cantor’s correspondence have likewise expressed this view (note 4): “The meeting between Cantor and Rudolf Steiner, the founder of Anthroposophy, did not lead to any intensive contact between the two academics” (p.424). In a letter dated the 28th September 1994, Hans Joachim Ilgauds assured me that nothing more relating to Steiner has been found, either in the files of the Prussian State Archives in Merseburg or in Cantor’s literary estate at the Göttingen University Archive.

much more with the development of a healthy manner of thinking. Yet this manner of thinking isn't merely logical, for the logical is also valid for the mathematical, and one can simply calculate with the logical on into the mathematical, and receive thoroughly consistent formations, but which do not need to have any application to reality."²⁷

Steiner's discussion relates to Cantor's investigations into the different levels of infinity. At the basis of these investigations lies the following definition more or less alluded to by Steiner: "I understand by a *power* or *cardinal number* of a set M (consisting of totally distinct, conceptually separate elements, m, m', \dots and hence is insofar determined and bounded), the general concept or generic concept (universale), which can be obtained by abstracting the set, the composition of its elements, as well as all the relations they may have among each other or with other things, and therefore especially with the order reigning among the elements, and then by solely reflecting it with everything common to those sets *equivalent* with M . I call two sets M and N *equivalent*, however, when it is possible to put them in such a relation with one another, that to every element of one, there corresponds one and only one element of the other." This definition stems from the essay, "The Theory of the Transfinites"²⁸.

Translated from the German by David W. Wood

²⁷ R. Steiner, *Die Vierte Dimension. Mathematik und Wirklichkeit* (GA 324a), p. 184.

²⁸ G. Cantor, "Die Lehre vom Transfiniten", p. 387.