

Kurt Gödel's *Philosophical Remarks* (Max Phil)

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Kurt Gödel left *Philosophical Remarks* in his *Nachlass* that he himself entitled *Max Phil* (*Maximen Philosophie*).¹ The opus originally comprised 16 notebooks but one has been lost. The content is on the whole the outline of a rational metaphysics able to relate the different domains of knowledge and of moral investigations to each other.

The notebooks were at first started as an intellectual diary in which Gödel writes an account of what he does and especially about what he should do concerning his research activities in mathematics, in philosophy, his career and his daily life.² They are in the beginning intended to serve only as a means of personal guidance, as a means of self-admonition and of self-perfection; they then become more and more a sequence of theoretical reflections and an attempt at a rational comprehension of human nature and its place in the cosmos.³ This endeavour leads him towards the question concerning the meaning of life and the existence of the world.

Answers to this kind of question cannot be found within disciplinary boundaries but the different disciplines might add insights to many sub-questions. Gödel therefore tries to integrate the different disciplines within a rational metaphysics that is at the end meant to guide scientific progress. The scientific world-view behind this endeavour resembles the one of Gottfried Wilhelm Leibniz but it is up to the scientific standards of the 20th century.

In this article we want to give for the first time a rough overview of the form of Gödel's *Philosophical Remarks* as well as of its content. We hope that this will then enable the reader to judge the outstanding significance of this œuvre. An outline of Gödel's philosophy previously became known through the publication of two books in 1995 and 1996. They provoked a turning point in the appreciation of Gödel's contribution to philosophy. One is the third volume of the *Collected Works* of Kurt Gödel, which

1 Most of the notebooks are only entitled *Max*, some *Max Phil* and two only *Phil*.

2 The fact that they started out as an intellectual diary is not the only resemblance with the form of Ludwig Wittgenstein's *Philosophical Remarks*. Wittgenstein at first took the form he had used for his so-called *Tagebücher* written during the First World War for his *Philosophical Remarks* but gave it up after a few pages. On other resemblances we will comment later on. Cf. Wittgenstein 1994, ed. by M. Nedo, p. XII.

3 They seem therefore to fit very well with what Pierre Hadot has described as the history of spiritual exercises. Cf. P. Hadot, *Exercices spirituels et philosophie antique* (2002).

contains some of his unpublished essays and lectures in philosophy such as: the Gibbs lecture given in 1951 (“Some basic theorems on the foundations of mathematics and their implications”), the Carnap papers written in 1953 (“Is mathematics syntax of language?”, version III and V) and the draft for a lecture (*Vortrag Konzept*, published as “The modern development of the foundations of mathematics in the light of philosophy”) probably written in 1961. The second one is Hao Wang’s last book on Gödel: *A Logical Journey. From Gödel to Philosophy*. It records Wang’s conversations with Gödel that took place in the seventies. Both of these books testify to the importance of Gödel’s philosophy for his scientific work but give no more than scattered clues about Gödel’s positive philosophy. This was the starting point of the project to edit the *Max Phil* to which this present book is related.

1. Gödel’s philosophy and his scientific oeuvre

Kurt Gödel is famous for being a genius but rather in logic, mathematics and maybe also in physics, not in philosophy. Nonetheless this already demonstrates that he worked fruitfully not only in a small, specialized field of one discipline but rather in several disciplines. This already makes him one of the last polymaths of the 20th century.⁴ Moreover he combined logic, mathematics and physics with philosophy, and philosophy was for him not only an addendum to his scientific work but the foundation that would allow him to develop his scientific work even further. There are several statements that show this, as for example: “My work is the application of a philosophy suggested outside of science and obtained on the occasion of thinking about science”.⁵

In what sense might Gödel have considered his scientific work to be a performance in applied philosophy? We might have a look at three of Gödel’s major contributions to science in order to answer this question: (1) the two logical results about incompleteness; (2) the proof of the independence of the axiom of choice from the axioms of set theory; and (3) the models of rotating universes for relativistic cosmology. Three important results in three different domains of knowledge: logic, mathematics and physics, three illustrations of an ability to identify important problems, and to produce new technical solutions to solve them. The first and the second have revolutionized research and opened up new domains, creating new methods that are of immense importance. The third has been less influential but Einstein himself considered it to be one of the major contributions to his theory. Now, all these results can be considered from a philosophical point of view as negative results or, as Wang writes, “disproofs of philosophical hypotheses of his age”. The first result (1931) is directed against pure formalism in mathematics and disproves it at least in the form it took with the Hilbert program; the second (1938-1940) shows that strong realism in set theory, represented by the axiom of choice, is no less coherent than constructivism; finally, the third (1949-1950) shows that materialism, in the form of the Mach principle, stating that the nature of inertia is determined by matter, is not necessarily implied by modern physics. Now, these important scientific

4 Amongst others there are for example: L.E.J. Brouwer (1881-1966), Henri Poincaré (1854-1912) and Hermann Weyl (1885-1955).

5 Cf. Wang 1996, p. 297, n° 9.2.2.

results, when considered as negative philosophical results, can be seen as a kind of applied philosophy, guided by a positive one as a heuristic principle, opposed to formalism, constructivism and materialism. As Gödel says in the quotation above, this positive philosophy was “suggested outside of science” in the sense of being chosen independently from it, although the scientific work has given Gödel the possibility to develop and implement it.

If this constitutes Gödel's negative philosophy what do we know about Gödel's positive philosophy then, about the philosophy that structures his scientific work? The positive philosophy is certainly not the one that his colleagues in the Vienna circle manifested, as the following quotations from the famous Grandjean-questionnaire shows. There Gödel utters in 1975: “1926-1928 frequ[ent] disc[ussions] with some younger members [of the Vienna Circle] but mostly (very often) I took a non-positivistic position. Attendance at sessions. [...] Yes, this group aroused my interest in the foundations but my views about them differed *fund* [amentally] (*subst*[antively]) from theirs”.⁶ And then in a further attempt to answer the question: “[...] I *don't* consider my work a “facet of the intellectual atmosphere of the early 20th century”, but rather the opposite. It is true that my interest in the foundations of mathematics was aroused by the “Vienna Circle” but the philosophical consequences of my results, as well as the heuristic principles leading to them, are anything but positivistic or empiristic. [...] I was a conceptual and mathematical realist since about 1925”.⁷

It has been noticed that the last assertion should be qualified with respect to other statements of Gödel and that Wang's own appreciation of his conversations with Gödel affords the idea of a philosophical change in Gödel's thinking around the 60s.⁸ For the sake of our purpose here, we don't wish to enter into such a debate now. The point is that we have no definite and clear understanding of what this positive philosophy is that Gödel calls a conceptual and mathematical realism. Until now, the material we have at hand to answer this question consists of Gödel's philosophical claims that are contained in his papers about specific problems in logic and in philosophy of mathematics. We can divide them into two categories: those that are contained in volume II of the *Collected Works* represent—with some important exceptions—Gödel's diagnosis of the state of knowledge in his time. They represent critical evaluations of some scientific topics and comprise suggestions of possible solutions for the main problems of the considered domains. The papers published in volume III of the *Collected Works* are a bit more explicit on his philosophical position, but their specific concern is still philosophy of logic, mathematics and physics, with the only important exception being the material published with the *Ontological proof*.

On the other hand we have some hints coming from the conversations with Wang and the fragments of the *Nachlass* that have been published in Wang's books. They are quite enigmatic and apparently disconnected. A page with a list of fourteen

6 Cf. *CWIV*, p. 447.

7 Cf. *CWIV*, p. 443f.

8 For example Wang 1996, p. 318.

assertions belongs to such material.⁹ Here it is reproduced in a corrected translation and a new transcription:

My philosophical viewpoint:

1. The world is rational.
2. Human reason can, in principle, be developed more highly (through certain techniques).
3. There are systematic methods for the solution of all problems (also art, etc).
4. There are other worlds and rational beings, who are of the other and higher kind.
5. The world in which we now live is not the only one in which we live or have lived.
6. Incomparably more is knowable *a priori* than is currently known.
7. The development of human thought since the Renaissance is thoroughly one-sided.
8. Reason in mankind will be developed on every side.
9. The formally correct is a science of reality.
10. Materialism is false.
11. The higher beings are connected to the other beings by analogy, not by composition.
12. Concepts have an objective existence (likewise mathematical theorems).
13. There is a scientific (exact) philosophy {and theology} (this is also most fruitful for science¹⁰), which deals with the concepts of the highest abstractness.
14. Religions are, for the most part, bad, but Religion is not.

Meine *philosophischen* Ansicht^{en}:¹¹

1. Die Welt ist vernünftig.
2. Die Vernunft im Menschen kann prinzipiell höher entwickelt werden (durch gewisse *Techniken*).
3. Es gibt *systematische* Methoden zur Lösung aller *Probleme* (auch Kunst *etc.*).
4. Es gibt andere Welten und vernünftige Wesen der anderen {und höheren} Art.
5. Die Welt, in der wir jetzt leben, ist nicht die einzige, in der wir leben oder gelebt haben.
6. Es ist unvergleichlich mehr *a priori* erkennbar als jetzt bekannt ist.
7. Die Entwicklung des menschlichen Denkens seit der *Renaissance* ist eine durchaus einseitige.
8. Die Vernunft wird in der Menschheit allseitig entwickelt werden.
9. Das formal Richtige¹² ist *?* eine Wirklichkeit^swissenschaft.
10. Der Materialismus ist falsch.

⁹ The first translation appeared in Hao Wang, 1996, p. 316, n° 9.4.17. On the basis of the new transcription by Eva-Maria Engelen, (see the German original text below the translation) the translation has been corrected with the aid of Mark van Atten. The most important corrections concern points 7, 9 and 12. In 7 it should not be “thoroughly intelligible (durchaus einsichtige)” but instead “thoroughly one-sided (durchaus einseitige); in 9 it should not be “formal rights” but “the formally correct (das formal Richtige)”; and in 12 one has to add “likewise mathematical theorems” (ebenso die mathematischen Theoreme)”.

¹⁰ This addendum in brackets is a footnote to “theology” in the manuscript.

¹¹ Kurt Gödel Item 060168; transcription by Eva-Maria Engelen.

¹² The reading “Das formal Rechte” cannot be excluded but it would be a synonym for “das formal Richtige”; however, it is not to be read as “die formalen Rechte” as it apparently was for the translation that appeared in Hao Wang (1996).

11. Die höheren Wesen sind durch Analogie nicht durch Komposition mit den anderen <Wesen> verbunden.
12. Die Begriffe haben eine objektive Existenz (ebenso die mat<hematischen> *Th<eoreme>*).
13. Es gibt eine wissenschaftliche (exakte) *Ph<ilosophie>* {und *Th<eologie>*¹³}, welche die Begriffe der höchsten Abstraktheit behandel<t>.
14. Die Religionen sind zum größten Teil schlecht, aber nicht die Religion.

Hao Wang, commenting on Gödel's fourteen "beliefs and conjectures", affirms¹⁴ that they were probably obtained by applying Gödel's favoured principle of uninhibited generalization "to certain generally accepted facts of human experience" and complains that "[w]hen these facts are made explicit, however, we do, I believe, see alternative choices".¹⁵ One of the quotations from the conversations seems even to corroborate Wang's interpretation on the use of a sort of inductive argument at least about Gödel's optimism concerning mathematics. The *quote goes as follows*: "Rationalism is connected with Platonism because it is directed to the conceptual aspect rather than toward the real [physical] world. One uses inductive evidence. It is surprising that in some parts of mathematics we get complete developments (such as some work from Gauss in number theory). Mathematics has a form of perfection. In mathematics one attains knowledge once and for all. We may expect that the conceptual world is perfect and, furthermore, that the objective reality is beautiful, good and perfect".¹⁶

Nevertheless, it is clear from the list above and from the transcriptions of the conversations that Wang presents in the same book, that Gödel does not use such an inductive procedure as a methodological tool for his philosophy. On the contrary, against the background of the conversations, the list reveals that Gödel searched for a systematic and exact philosophy in the spirit of the philosophers of the 17th century. He was looking for an axiomatic system for primitive concepts (belief 13) to which he ascribed an objective existence in virtue of his conceptual realism (belief 12), all of which should finally allow us to develop systematic methods for the solution of all problems (belief 3). The objective existence for concepts seems to be a prerequisite for philosophy being an exact theory. We know that Gödel took the view that philosophy, as an exact theory, should do for metaphysics as much as Newton did for physics.¹⁷ His dream of an exact theology and the role of religion (beliefs 13 and 14) echoes Leibniz's assertion (which Gödel quotes elsewhere) that philosophy—as a systematic enterprise—has to speculate rationally about God.¹⁸ Human experience, knowledge and action are in need of an explanation for which the idea of God is the keystone. This keystone is directly related to the notion of cause¹⁹, which is the fundamental concept of philosophy. Gödel is convinced that such speculations are necessary for

13 „Und dies<e> ist auch für die Wissenschaften höchst fruchtbar.“ (Footnote by Gödel.)

14 Wang 1996, p. 316.

15 *Ibid.* p. 318.

16 Wang 1996, p. 316, n° 9.4.18.

17 Wang 1974, p. 85.

18 "My theory is a monadology with a central monad [namely God]. It is like the monadology by Leibniz in its general structure". Wang 1996, p. 8, n° 0.2.1.

19 Wang 1996, p. 146, n° 4.3.15.

the two tasks that he attributes to philosophy, that is: (1) guidance on science, and (2) offering answers to the traditional question concerning the meaning of the world.²⁰

Religions, he says (belief 14), are generally bad. What he means is probably that religious communities prevent people from searching for such a rational theology, i.e., a philosophical account of the meaning of the world. But in contrast to this he calls religion that embodies such a rational philosophy fruitful for science. This idea takes quite a political flavor in Gödel's thoughts. He asserts that if philosophers do not do their work and avoid reasoning rationally on the whole picture (which includes God), then someone will profit from the situation by manipulating humanity through bad religions.²¹

Coming back to Wang's interpretation, it is true that what we know from our science justifies for Gödel the kind of rational optimism that he stresses in the list (beliefs 1, 2, 6 and 8) but the content of the list seems related to more than an inductive argument. It is related to the idea that philosophy is a normative discipline that should offer a general framework that cannot be reduced to science.²² We find here expressed a very high concept of philosophy, clearly inspired by the classical tradition, where moral, political and theoretical questions receive an answer in the same frame.

This conception of a rational philosophy is clearly opposed to the philosophical *Zeitgeist* that Gödel got to know during his visits to the Vienna Circle between 1926 and 1928. The reasons why he was so opposed to this *Zeitgeist* are partly revealed in the list (beliefs 7 to 10). They show that he holds the errors of the *Zeitgeist* to be obstacles to the development of human reason as well as to the sciences. The threat that he sees for the sciences in materialism, positivism and formalism is reflected in a statement from his 1961 paper on *The modern development of the foundations of mathematics in the light of philosophy* to which the list is clearly connected. There he says: "Particularly in physics, this development [of philosophy toward scepticism, materialism and positivism] has reached a peak in our time, in that, to a large extent, the possibility of knowledge of the objectivizable states of affairs is denied, and it is asserted that we must be content to predict results of observations. This is really the end of all theoretical science in the usual sense (although this predicting can be completely sufficient for practical purposes such as making television sets or atom bombs)".²³ This states clearly that the one-sided leftist²⁴ tendency towards materialism, positivism and formalism could sound the death knell for all theoretical science.

Finally, we have very few clues for understanding Gödel's assertions on other beings, other worlds and other lives (beliefs 4 and 5) except for what we know about Gödel's assertions on the afterlife in the letters to his mother, which are, as Gödel

20 "[...] philosophy has as one of its functions to guide scientific research. Another function is to study what the meaning of the world is". *Ibid.* p. 191 n° 6.2.6.

21 "The rulers find it hard to manipulate the populations: so they use materialism to manipulate the intellectuals and use religion to manipulate the workers [...]" Wang 1996, p. 146, n° 4.3.15

22 *Ibid.*, p. 308, n° 9.3.21 "True philosophy is precise but not specialized". "Science alone won't give philosophy; it is noncommittal regarding what really [is] there". *Ibid.*, p. 297, n° 9.2.3.

23 *CW* III, pp. 375-77.

24 "Thus one would, for example, say that apriorism belongs in principle on the right and empiricism on the left side". *CW* III, p. 375.

himself admitted, a very brief sketch of “rather deep philosophical questions” and cannot be used as a philosophical text.²⁵

The lesson that ought to be drawn from this brief analysis is that we cannot completely understand Gödel's positive philosophy from the material that we have at our disposal. The third volume of the *Collected Works* offers a fundamental corpus of papers, which nevertheless concerns specific questions on logic, mathematics and physics. Wang's book is based on long conversations that he conducted with Gödel over a period of ten years, but they are scattered, disconnected or at best organized in his book according to his own understanding of them, that is through the filter of Wang's factualism.

Wang himself admitted:

“What is likely to be of great importance in philosophy is his unpublished work. My reconstruction of the conversations with him is meant to be a small step toward making his unpublished views more broadly accessible. The major task of selective publication from his vast *Nachlass* will undoubtedly be arduous and valuable”.²⁶

There still exists a vast *Nachlass* of unpublished writings by Gödel in Princeton. The editors of the *Collected Works* have identified some of these writings as being valuable and significant but were not able to integrate them in the *Collected Works* because of a lack of time and exhaustion of funding.²⁷ Gödel himself composed a list of unpublished manuscripts that he considered to be particularly important.²⁸ Wang writes regarding this organization: “The ordering of items in Gödel's statement suggests that he valued most the one thousand pages of philosophical assertions (S1). There are fifteen philosophical notebooks labelled ‘Max’ and two theological notebooks”.²⁹

The great significance of the so-called *Max Phil*, the philosophical remarks by Gödel, is well acknowledged by a circle of experts on Gödel's work. They were therefore indicated for publication in the *Collected Works*. But since they, like the majority of the *Nachlass*, are written in the *Gabelsberger* shorthand (which is no longer taught) the editors had underestimated the amount of time needed for the work.³⁰ Furthermore the texts are condensed and hard to decipher. They are arranged kaleidoscopically, some of the subjects have been taken up many times in order to be elucidated further and further with respect to different points of view coming from different disciplines and different philosophical standpoints. Another difficulty lies in the fact that Gödel wrote the remarks for himself and therefore did not in the least try to expound the issues for an imaginary reader. Furthermore he is falling back upon a vast range of

25 Wang 96, p. 106. See the whole argument on pp. 105-108. The letters to Marianne Gödel have been reprinted in the *Collected Works of Kurt Gödel*, volume IV, pp. 427-439.

26 Wang 1987, p. 9. This assertion motivated the project *Kurt Gödel philosopher: from logic to cosmology*, which was directed by Gabriella Crocco. Cf. “Introduction” to this volume.

27 Therefore the editor in chief, Solomon Feferman, writes: “Though indeed much has been gained in our work there is still much that can and should be done”. Feferman 2005, p. 132.

28 Cf. Wang 1987, p. 9; and Wang 1996, pp. 95-96.

29 Wang 1996, p. 96.

30 “There were several reasons for editors' inability fully to realize their intentions: gross underestimation of the time to do the editorial work; difficulties in reconstructing some of the texts; changes in personnel [...] and eventually, after twenty years of effort, exhaustion of sources of funding”. Dawson and Dawson 2005, p. 150 and 152; as well as Dawson and Dawson 2010, p. 21 and 23.

western philosophy that ranges from ancient and medieval philosophy up to and including contemporary philosophy.

Nevertheless it is of the utmost importance to follow up on this undertaking. The editing and publishing of the so-called *Max Phil* will allow us to have a true picture of Gödel's philosophy, which did not result from some activity done in his free time by a mathematician who had become bored with mathematics, but rather is the work of a real philosopher. The clues to this philosophy that can already be gleaned through the books by Wang and the edited papers in the *Collected Works* will then be extended by a systematic construct of ideas that was not finished but was developed to a high state of maturation.

The insights that we have already gained from this corpus after four years of work will be presented in the following sections of this paper.³¹ These insights already allow us to give a much more precise understanding of Gödel's philosophy than ever before.

2. Gödel's Philosophical Remarks (= *Max Phil*)

Technical description of the *Max Phil*

The corpus of the *Max Phil* notebooks once consisted of 16 notebooks but as Gödel himself documented notebook XIII was lost, and therefore only 15 notebooks remain. The numbering starts from zero and ends with XV, and in total they comprise about 1500 handwritten pages³² in the *Gabelsberger* shorthand, which Gödel had learned in secondary school in Brünn. They were probably started in 1934 and the record ended possibly in 1955. The dating will be explained shortly.

On the cover of the first notebook one can read "*Philosophie I (=Max I) Format heißt Max 0*" ("Philosophy I (=Max I) format is called *Max 0*"). The second notebook has the heading "*Zeiteinteilung (Max) I*" ("Timing (*Max*) I") and the third "*Zeiteinteilung II (Max.) =~~Phil~~H*" ("Timing II (*Max*)"). Regarding this third notebook, Cheryl Dawson has recorded that one can read the following on the inner face of the cover: "*Das war ursprünglich das erste Max Heft neben Philosophie] Heft; später Max und Ph[ilosophie] zusammengesogen*" ("That was originally the first *Max* volume apart from [the] *Ph[ilosophy]* volume; later *Max* and *Ph.* joined").³³

These remarks as well as the deletions indicate that Gödel made two attempts to write a philosophical diary. The first attempt could have been the one in 1934 when he started to write down lists of philosophical books that he wanted to study as well as the records of the lectures in Vienna. The second attempt should be the one begun with the third notebook that now has the title "*Zeiteinteilung II (Max.) =~~Phil~~H*".

31 The group at Aix-Marseille University has worked together on *Max IX, X and XI* for which there are suitable transcriptions in the meantime. There is a transcription of *Max VI* that has not yet been checked, and a transcription for *Max XII* that is in need of a second check. The transcriptions for *Phil XIV* and *Max Phil XV* have not yet been completed.

32 "1. About one thousand 6x8 inch stenographic pages of clearly written philosophical notes (=philosophical assertions)". Wang 1987, p. 9.

33 Cf. *CW III*, p. 429. Unfortunately this is not legible on the microfilm. One would have to look at the notebook in the archives in Princeton to verify this.

Max H<eft> III is after all the first notebook that was purchased in the United States whereas the first three volumes were bought in Vienna.³⁴ The following nine volumes are entitled: *Max IV*, *Max V*, *Max VI*, *Max VII*, *Max VIII*, *Max IX*, *Max X*, *Max XI* and *Max XII*. And for volume XIII we find a note on volume XIV where Gödel has written: “*Heft Phil XIII (= Max XIII) (VI. 45—IV 46) wurde im April 1946 verloren*” (“*Volume XII (=Max XIII) (VI 45—IV 46) was lost in April 1946*”). Therefore we know that the notebooks are called ‘*Phi[osophie]*’ and ‘*Max*’ again, and that he started notebook XIV right after having lost XIII because in XIV he gives a date: “*ca. Julie 46*” (“*approx. July ‘46*”). Volume XIV is then called ‘*Phil XIV*’, and notebook XV ‘*Max*’ on the cover and ‘*Phil*’ inside.

To sum this up. At the beginning the notebooks are named ‘*Max*’ and ‘*Phil*’ then only ‘*Max*’ and at the end ‘*Phil*’.

The ensemble can be divided into four units: *Max Phil 0-II*, *Max III-VIII*, *Max IX-XII* and *Phil XIV-XV*. The first unit contains lecture notes, maxims and a work plan besides philosophical remarks; the second covers philosophical remarks and remarks from a viewpoint of scientific disciplines; the third unit is in principle like the second but supplemented by remarks on physics and the fourth unit is different from the third insofar as it includes brief treatises about time and truth. We will have a look at the four units in much greater detail without further ado.

A. *Phil I Max 0 – Max Phil II (Zeiteinteilung)*

The first unit consists of three notebooks, namely:

<i>Phil I Max 0</i>	1934 – 16 th of June 1941	p. 1-80
<i>Max Phil I</i>	24 th of August 1937 – the 1 st of January 1938	p. 1-78
<i>Max Phil II</i>	29 th of March 1938 – 10 th of January 1942	p. 79-157 plus 40 pages (<i>Zeiteinteilung</i>).

The first unit was started when Gödel was still in Austria. Notebooks 0-II contain work plans for Gödel's studies in philosophy, considerations on working methods in mathematics, maxims for the conduct of life as a successful thinker and researcher, and lecture notes.

Gödel took the lecture notes in *Phil I Max 0* when he was still staying in Vienna. He recorded a lecture that Moritz Schlick (1882-1936) gave in the winter term 1934/1935 on logic and epistemology, a lecture given by Alfred Kastil (1874-1950)³⁵ and one given by Dietrich von Hildebrand (1889-1977).³⁶ The lecture notes for Schlick's presentation are followed by a list of 25 topics under the heading: “What is knowledge?” (*Was ist Erkenntnis?*), that are presumably also connected to a seminar or lecture by Schlick.

³⁴ The first two notebooks are from “*Kramer, Wien, 8*”. And the third one is from “*Alma. Austria, Österreichisches Erzeugnis*”. All the others have the heading “*Paragon Series. Note Book*”.

³⁵ Alfred Kastil was a professor at the university of Innsbruck and known for his research on Aristotle and Franz von Brentano. He was a student of the Austrian philosopher Anton Marty. It is still unclear where Gödel might have listened to Kastil's lecture. Kastil may have given a guest lecture in Vienna.

³⁶ Hildebrand was a student of Edmund Husserl and was also strongly influenced by Max Scheler. He carried out a type of phenomenological Catholic value doctrine. Hildebrand had to leave Munich in 1933 where he had been professor of philosophy. He went to Vienna from where he had to flee again in 1938. Hildebrand was *außerordentlicher Professor* at the University of Vienna.

The lecture notes are following up considerations on how to get an overview over the present philosophical debates as well as over those in the past, and how to judge the importance of a philosopher. One might presume that these questions also led him to attend the lectures.

With regard to the date of the lecture by Kastil and Hildebrand more research is required. Gödel notes down the 6th of October from 6 p.m. to 8 p.m. for von Hildebrand's lecture, and the 19th of October from 5 p.m. to 6 p.m. for Kastil's lecture but he doesn't give the year. It might be 1934 because Hildebrand left Germany in 1933 but it could also be 1935 or even later.

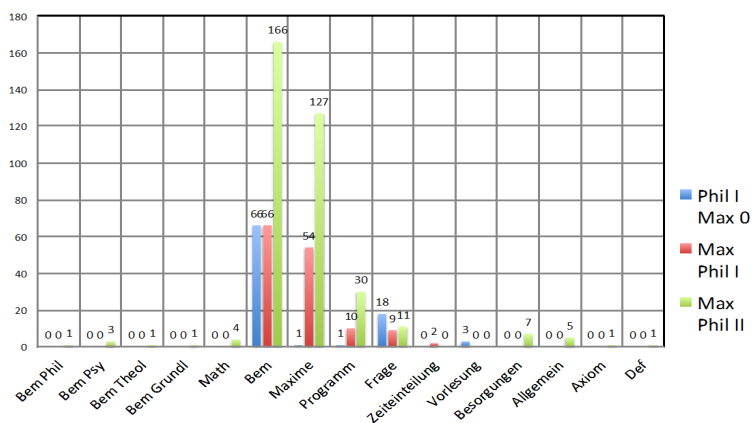
The next date that is given by Gödel in *Phil I Max 0* can be found on page 36. It is the first of January 1940, when Gödel was still in Vienna.³⁷ To avoid being recruited as a German soldier he left the German Reich (to which Austria by then belonged) at the very last moment. Germany was already at war with Poland and Gödel was obviously working seriously on his philosophical remarks. Further dates are given in *Phil I Max 0* on pages 69 (12th of June 1941) and 80 (16th of June 1941). This is quite remarkable as one also finds dates in *Max Phil I* (dates from 24th of August 1937 until the 1st of January 1938) and *Max Phil II (Zeiteinteilung)* for this period of time. But there is not only a chronological continuity between *Phil I Max 0*, *Max Phil I* and *II* but also between *Max Phil II (Zeiteinteilung)* (dates from the 29th of March 1938 till the 10th of January 1942) and *III* (beginning of October 1940 until the 1st of January 1941) up to *Max IV* (May 1941 until April 1942). This indicates that Gödel worked on the first five notebooks simultaneously or overlapping at certain times.

Nevertheless, the reader will be able to see in the following sections of this paper that there are very good reasons for dividing the *Max Phil* into four units, among which the first three notebooks form a distinguishable unit. These three notebooks contain, amidst philosophical remarks, mainly suggestions for Gödel's work program in philosophy together with lists of philosophical literature that he wanted to study. Besides that there are philosophical questions and problems he is dealing with and especially maxims for his conduct of private and academic life. And he is also reflecting on strategies to build up an academic career. He does this both concerning himself as well as in a general quasi-sociological way. Furthermore there are lists of errands he has to run that almost remind us of a manual on how to optimize one's life. One hardly finds reflections like that or maxims after notebook *Max Phil II (Zeiteinteilung)*.

The following diagram might give an impression of the distribution of the particular remarks. It shows that although there are a few remarks that have already been characterised more precisely, the vast majority have not. Most of them are simply called 'remark', 'maxim', 'program' or 'question'. That does not mean that the content of the remarks is unspecified, but one has to take note of the fact that the headings of the remarks are not specified.

³⁷ Gödel stayed in Vienna until the 5th of January 1940 then he travelled to Berlin together with his wife Adele. There they got their visas for passage through Lithuania, Latvia and Russia by the trans-Siberian train. From Russia they went to Yokohama and from there to the USA. The Gödels crossed the border into Lithuania on the 16th of January 1940.

Phil I Max 0 to Max Phil II



Graph 1

The abbreviations can be read as follows: *Bem Phil* = *Bemerkung Philosophie* (philosophy remark); *Bem Psy* = *Bemerkung Psychologie* (psychology remark); *Bem Theol* = *Bemerkung Theologie* (theology remark); *Bem Grundl* = *Bemerkung Grundlagen* (foundations remark); *Math* = *Bemerkung Mathematik* (mathematics remark); *Bem* = *Bemerkung* (remark); *Maxime* (maxim); *Programm* (programme); *Frage* (question); *Zeiteinteilung* (timing); *Vorlesung* (lecture); *Besorgungen* (errands); *Allgemein* = *Allgemeine Bemerkung* (general remark); *Axiom* (axiom); *Def* (definition).

In order to understand this and the following catalogues of remarks better one should know what content is behind all this. We will therefore offer a list of philosophical, academic and scientific topics together with a further non-exhaustive list of specific remarks where one can find these topics that might already give a good idea about the setting.

- Reflections on logic, the concept of proofs, function, definition and choice of language are to be found under: *Bem Gr*, *Bem Psych* as well as *Bem Phil*.
- Reflections on the foundations of set theory are to be found under: *Bem Grundl*, *Bem Psy* and *Bem Gr*.³⁸

³⁸ ‘*Gr*’ might be read as ‘*Grammatik*’ for the moment and is to be understood in the tradition of philosophical grammar from the XVII century, which is also followed by Wittgenstein in his manuscript *Philosophische Grammatik* where the main subject is the relation between language, thought and the world. But there is a remark on the last page of *Max Phil* XIV that indicates that *Gr* has sometimes to be read as *Grammatik* and sometimes as *Grundlagen*.

- Reflections on physics, the concept of time, force, and quantum mechanics are to be found under *Bem Phys*, *Bem Phil* and *Bem Psych*.
- Reflections on metaphysics, the concept of possibility, reality, analogy as well as cause, idealism, realism and positivism are to be found under: *Bem Phil*, *Bem Gr*, *Bem Psych* and *Bem Theol*.
- Reflections on moral theory, law, history and responsibility are to be found under: *Bem Jur*, *Bem Phil* and *Bem Psy*.
- Reflections on theology, the nature of God, theodicy, creation, good and evil as well as on religion are to be found under: *Bem Theol* and *Bem Phil*.
- Reflections on linguistics and the structure of natural languages are to be found under: *Bem Phil*, *Philol* and *Bem Gram*.
- Reflections on the theory of knowledge and the theory of perception are to be found under: *Bem Psych*, *Bem Phil* and *Bem Theol*.
- Reflections on the theory of mind, on sensations, wishes, emotions, and *appetitio* are to be found under: *Bem Psych*, *Bem Phil* and *Bem Theol*.
- Under the heading of *Bem Phil* one finds reflections on the history of philosophy and especially on authors like: Plato, Aristotle, Thomas of Aquinas, Descartes, Leibniz, Brentano, Brouwer, Frege, Russell and Carnap.

B. *Max III* – *Max VIII*

The second unit consists of 6 notebooks, namely:

<i>Max III</i>	1940 and inside the notebook 1/1/1941	p. 1-151 plus 3 pages
<i>Max IV</i>	ca. ³⁹ 1 st May 1941 – ca. 30. April 1942	p. 152-285 plus 3 pages
<i>Max V</i>	ca. 1 st May 1942 – June 1942	p. 286-379 plus 1 page
<i>Max VI</i>	1 st July 1942 – 15 th July 1942	p. 380-469 plus 1 page
<i>Max VII</i>	15 th July 1942 – 10 th September 1942	p. 470-562 plus 1 page
<i>Max VIII</i>	15 th September 1942 – ca. 18 th November 1942	p. 563-680 plus 1 page

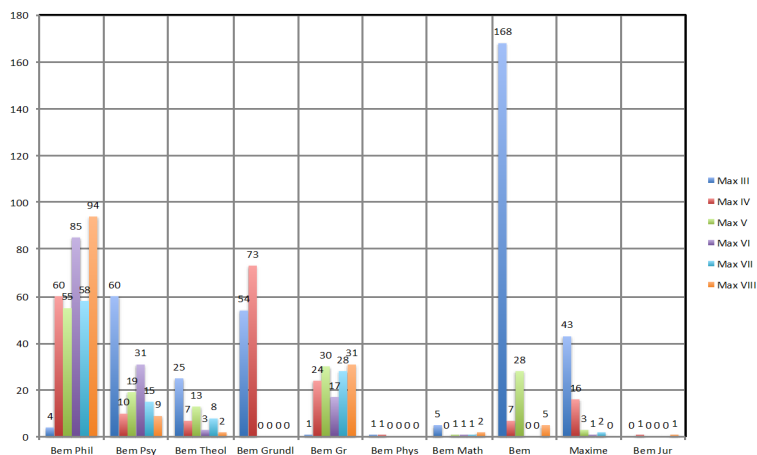
Max III is, as we have already mentioned, the first notebook that Gödel acquired in America. The numbering starts from *Max III* and is then continuous until *Max VIII*. This indicates that Gödel considered the notebooks III to VIII to be a unit within the ensemble of the philosophical remarks. This cluster comprises approximately 680 pages altogether. Moreover, it should be observed that Gödel wrote almost 300 pages between May 1942 and November 1942 and that it was a very intense period of work in his life.

At the beginning of notebook *Max III* the vast majority of remarks are still not characterised but from the second half of notebook III on, Gödel increasingly specifies what type of remark they are. Finally from the second half of *Max IV* onwards non-specified remarks and maxims as well as the heading ‘program’ disappear almost completely.

The diagram for *Max III*—*Max VIII* might again give an impression of the distribution of the particular remarks. One can very clearly see that the non-specified remarks are still quite noticeable in *Max III*, but then from the middle of *Max III* onwards most of the remarks have been put into specific categories:

³⁹ These “ca”. are written down in the manuscripts by Gödel himself, despite the fact that he gives an exact date.

Max Phil III to Max Phil VIII



Graph 2

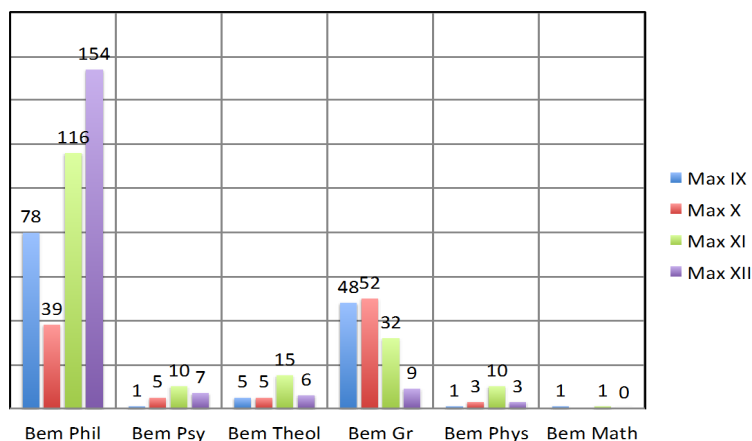
C. *Max IX-XII*

The third unit consists of four notebooks namely:

<i>Max IX</i>	18 th of November 1942 – March 1943	p. 1-96
<i>Max X</i>	12 th of March 1943 – 27 th of January 1944	p. 1-93
<i>Max XI</i>	28 th of January 1944 – 14 th of November 1944	p. 1-155
<i>Max XII</i> ,	5 th of November 1944 – 5 th of June 1945	p. 1-119

Gödel follows the same pattern as in *Max III* to *VIII* but unit three contains important remarks on the theory of relativity and on quantum mechanics. Besides these topics he also reflects on the notion of force in these volumes. Gödel in fact contemplates 'force' as a notion in physics (gravitation and quantum mechanics), as a notion in psychology (affects and emotions) and as a notion in biology. From *Max XI* onwards one can also find remarks on philology but no unspecified remarks or maxims in the interim.

Max IX to Max XII



Graph 3

D. *Phil XIV* and *Max Phil XV*:

The fourth unit consists of two notebooks namely:

Phil XIV July 1946 – May 1955

p. 1-128

Max Phil XV May 1955 – ?

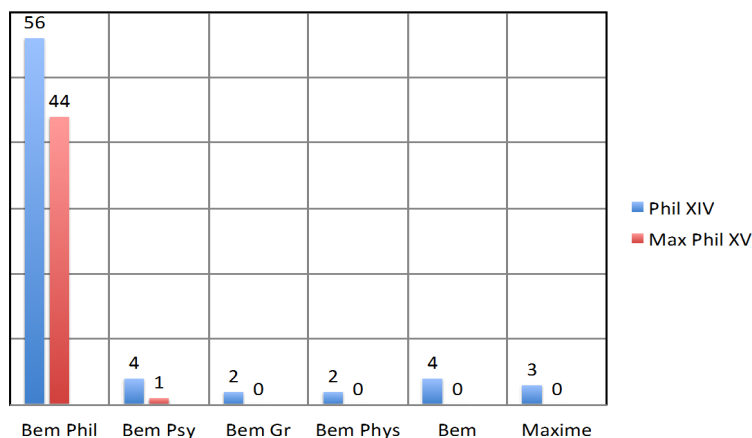
p. 1- 33

Whereas notebook XIV is just entitled '*Phil XIV*', Gödel himself has written "*Letztes, Max XV*" (endmost, *Max XV*) on the front cover of the last notebook but '*Phil*' for philosophy as a heading inside the notebook.

The two last volumes are taken to be a separate unit and not a steady continuation of *Max IX-XII* since they start with a long essay on the passing of time in 14 sub-items ("*Das Vergehen der Zeit*", 20 pages) that includes a separate chapter on the notion of truth (9 pages).

Another particularity of these two notebooks is the long period of time in which they were written—almost 9 years; (in this interim Gödel wrote "What is Cantor's continuum problem?", the paper on Einstein for the Schilpp-volume, "Some basic theorems on the foundations of mathematics and their implications", and the beginning of the Carnap paper "Is mathematics syntax of language?"—see table below).

Phil XIV and Max Phil XV



Graph 4

We can see that again there are unspecified remarks and maxims in *Phil XIV*, but not in *Max Phil XV*. *Max Phil XV* is the end of the series, and contains only 33 pages. Gödel began it in May 1955, but we do not know when and why Gödel stopped the series. What we do know is that he had been struggling with the Carnap paper since 1953, and that Einstein died in April 1955. Their friendship and their conversations had accompanied the writing of the notebooks from 1942 onwards.

In the interim while Gödel was writing the philosophical remarks (notebooks 0-XV) he also worked on several papers on philosophy and physics. One would imagine that there can be found parallel ideas between the two but we will have to wait for the transcription and publication of the whole corpus in order to be able to answer this question.

<i>Phil I Max 0 – Max VIII</i> probably 1934 – Nov. 1942	“The consistency of the axiom of choice and of the generalized continuum hypothesis”	published in 1938, 1939, 1940
<i>Max IX-X</i> Nov. 1942-Jan. 1944	“Russell’s mathematical logic”	started in Nov. 1942 published in 1944
<i>Max XI-XIII</i> Jan. 1944 – July 1946	“What is Cantor’s continuum problem?”	started in Nov. 1945 published in 1947
	Three papers on relativity and cosmology	started in July 1946 published in 1949
<i>Phil XIV</i> July 1946(?) – 1955	Lecture: “Some basic theorems on the foundation of mathematics”	delivered in 1951
<i>Max Phil XV</i> 1955 – ?	“Is mathematics syntax of language?”	started in 1953 never published

3. The content of the *Philosophical Remarks* (=Max *Phil*). First insights

Gödel started the philosophical notebooks as a realization of an ethical approach. Self-perfection and self-admonition are part of this approach. They seem very much to be in the tradition of *Meditations* by Marcus Aurelius or Goethe’s *Maxims and Reflections*. At the same time Gödel discusses philosophical problems from the viewpoint of different academic disciplines and has a kind of 17th century metaphysics as an outline in mind. The scientific disciplines contribute to answering the question of why the world is as it is insofar as they identify and construct objects, isolate phenomena and find laws that are generalizations from observations and constructions. Gödel tries to show the contribution of each academic and scientific discipline and puts them in relation to each other and the classical problems of traditional philosophy concerning freedom, good and evil, death and the significance of our lives. Generalization, idealization and analogy are essential philosophical methods linking up science and philosophy which cannot be set apart. Finally, from the point of view of style, the way in which one remark on a certain question follows another and is then taken up again later on to think it through from a different perspective reminds one very much of the form Ludwig Wittgenstein chose for his notebooks and his *Philosophical Investigations*. But in contrast to Wittgenstein, Gödel is much more engaged in dialogues with thinkers of the past. Among them are classical authors like Plato, Aristotle, Augustine of Hippo, Thomas of Aquinas, René Descartes, Gottfried Wilhelm Leibniz, Immanuel Kant and Georg Wilhelm Hegel, as well as contemporaries like Gottlob Frege, Giuseppe Peano, Bertrand Russell, Luitzen Brouwer, and

Rudolf Carnap. But there are also nearly forgotten ones that he mentions like his teacher Heinrich Gomperz.⁴⁰

Why is Gödel so involved in such a deep and extensive dialogue with the philosophers of the past? We can find a direct answer to this question from Gödel himself in the *Max Phil*. In one of the remarks at the end of notebook IX, Gödel comments on his methodology and gives some precious insights into the nature of his philosophical concerns and tasks. We will use this *Bemerkung* as a thread in the presentation of the content of the *Max Phil* of the third and fourth group that we have been exploring thus far.

Remark Philosophy: My work with regard to philosophy shall consist in an analysis of the uppermost concepts (the logical and psychological ones); in other words what has to be done after all, is to write down a list of these concepts and to think of their possible axioms, theorems and definitions (including the application on the empirically given reality of course). But in order to be able to do so, one has first to have acquired a sense of what one can assume through (halfway understood) philosophical reading and the writing down of philosophical notes. On the other hand, the understanding of an axiomatics will in turn increase the understanding of philosophical authors [thus an interplay from above and below at which the right proportion is important]. A replacement for the reading of works by philosophers is the reading of some other good books accompanied by a precise analysis, the learning of languages [Hebrew, Chinese, Greek?] and the precise definition of the occurring words and concepts.

Bemerkung (*Philosophie*): Meine Arbeit in Bezug auf *Philosophie* soll in einer Analyse der obersten Begriffe bestehen (der logischen und *psychologischen*); das heißt, was letzten Endes zu tun ist, ist [79] eine Liste dieser Begriffe aufschreiben und die möglichen *Axiome*, *Theoreme* und *Definitionen* für sie überlegen (selbstverständlich samt Anwendung auf die empirisch gegebene Wirklichkeit). Um das aber tun zu können, muss man zuerst durch (halb verstandene) *philosophische* Lektüre⁴¹ ein „Gefühl“ dafür erwerben, was man annehmen kann. Andererseits wieder wird das Verstehen einer *Axiomatik* das Verständnis der *philosophischen* Schriftsteller erhöhen [also Wechselwirkung von „oben“ und von „unten“, wobei das richtige Verhältnis wichtig ist].

Ein Ersatz für die Lektüre von Philosophen ist die Lektüre irgendwelcher guter Bücher mit genauer Analyse, das Lernen von Sprachen [*Hebräisch*, *Chinesisch*, ?*Griechisch*?] und die genaue *Definition* der vorkommenden Worte und Begriffe.⁴²

The first insight into the content of the *Max Phil* offered by this remark is what can be called a virtuous-circle-principle methodology for his philosophical work. The aim of philosophy described here consists in writing down the list of the most essential concepts of logic and psychology (we will come back to this later) and to analyze them. Nevertheless, there is no room for direct evidence concerning the list of these concepts, neither for a direct intuition for their required axioms and definitions: only stepwise research can lead to the final result. What Gödel says in the *Bemerkung* implies that one may start a virtuous circle process by reading the work of philosophers. Philosophy

⁴⁰ Gomperz was a member of the Vienna circle but developed a philosophy of his own that he called “Pathempiricism”. Karl Popper and Karl Bühler also mention Gomperz as their teacher.

⁴¹ Und das Niederschreiben von *philosophischen* „*Bemerkungen*“. Footnote by Gödel.

⁴² *Max Phil* IX (pp. 78-79).

intended as metaphysics was from its beginning a search for the most general concepts able to explain the world of phenomena. For this reason, metaphysics is deeply tied to logic where the latter is the “science prior to all others, which contains the ideas and principles underlying all sciences”.⁴³ The philosophers of the past had tried to offer such a systematic list and an analysis of the uppermost concepts on the basis of the knowledge of their time. The historical roots of their works make a direct understanding of their conclusions and an immediate comprehension of them quite impossible. Their given reality is deeply different from our own and the gap cannot be easily bridged. Notwithstanding this, reading the works of the philosophers of the past gives us “a sense of what one can assume”, that is, a feeling of the direction in which one has to search. This feeling leads to a better understanding of the uppermost concepts which leads in turn to a better understanding of the philosophers, and so on. Between the “inductive” evidence coming from the material delivered by philosophy through its history (what Gödel calls the “below” in the remark) and the internal intelligibility of the axiomatic that should result from this stepwise understanding (the “above”), Gödel asks for “a right proportion”. This can probably mean that there cannot be any acceptance of a frame of analysis from the philosophy of the past without an attentive evaluation of its capacity to improve the understanding of our knowledge in the face of our own experience. Conversely, the acceptance of an axiomatic of the uppermost concepts necessary for explaining and guiding our present knowledge cannot be independent from its capacity of actualizing and better understanding the material delivered by the philosophy of the past. The “right proportion” expresses the necessity to seek the correct relation between the present and the past attempts in respect to the searching for the theoretical foundations of our knowledge and the meaning of the word. In order to make the experience of the past valuable, we have to find such a right proportion. The stepwise character of the methodology indicated by Gödel reminds us the kind of procedure for gaining more and more evidence described for example in the 1951 paper in respect to the iterative notion of set (*CWIII*, p. 306-7). The analysis of the stepwise evidence, with its feedback effects, could give us the key for the kind of *ars inveniendi* and *ars demonstrandi* that Gödel was searching for through the analysis of the uppermost concepts. The content of *Max Phil IX-XIV* is in truth described by such a methodology. Leibniz’s philosophy represents in these notebooks the material from the past that Gödel urges throughout his speculations on the notions of concept, of idea, of time, of space, of force, of freedom, of matter etc. The search for the “right proportion” between Leibniz’s philosophy and what would be a modern metaphysics conceptualising a general frame for the whole domain of science (mathematics, physics, cosmology, biology, psychology, linguistics, sociology, history, and so on) would result, according to Gödel’s intention, in a philosophy that was at the same time able to both transform and to illuminate our lives.

The second insight into the content of the *Max Phil* offered by this *Bemerkung* concerns the relationship between the logical, the psychological and the physical level. Gödel mentions in the first parenthesis of the *Bemerkung* that the list of uppermost concepts should contain the logical and the psychological ones. Furthermore he specifies in the second parenthesis that the axiomatic for such concepts should include the conditions of their applications to reality. We have here the indication of the three

⁴³ Cf. Russell paper *CWII*, p. 119.

levels of analysis which have to be taken into account by philosophy and which are to be found throughout the third and fourth group of the *Max Phil*. The first level is the logical one with its notion of metaphysical possibility, where concepts are structures of whatever could be, that is, causal principles of real and possible objects, these latter being intended as their realisations. The second is the human level of concepts, structuring the mind of beings that, as we are, are essentially involved in space and time. The notion of conceivability is the psychological correlate to the notion of metaphysical possibility at the logical level. The third level is the one of reality, structured by the logical concepts in a way that can be apprehended by human minds through the analysis of the physical laws describing the behaviour of material objects. The physical world is, in this sense, a necessary intermediate between psychology and logic. Therefore the grounded analogies that can be established between psychological and physical concepts are very precious tools for tending toward the logical concepts. Gödel is quite explicit in *Max Phil* IX, X and XI on the importance of such a detour through matter in order to tend toward the conceptual structure of the *Begriffswelt*, (i.e. the logical space of concepts). The set of primitive logical notions includes the concept of concept, the concept of object, the concept of negation, the concept of generality and the concept of application (called by Gödel the “esti” relation). This latter seems to be involved in the notion of cause, which, as Gödel says in *Phil* XIV, is the most fundamental philosophical concept. It involves in turn the concepts of force, of joy, God, space and time. To these fundamental philosophical concepts Gödel relates on the one hand the analysis of the human mind and in particular of thinking, perception, memory, emotions, evidence and so on. On the other hand, he tries through the analysis of force, space and time to reconsider the fundamental concepts of physics such as inertia, gravitation and attraction and repulsion, the latter being involved in the notion of a rigid body.

Since such systematic research is not oriented towards verifiability or falsifiability but towards exactness and generality and since “[e]veryday knowledge, when analyzed into components, is more relevant [than science] in giving data for philosophy”⁴⁴ (as science alone is noncommittal regarding what really is there), the resulting metaphysics should be at the same time prescriptive for science and for the analysis of the “meaning of the world”.

The third insight into the content of the *Max Phil* offered by our *Bemerkung* above is related to the assertion that another possibility for obtaining a fruitful analysis of the uppermost concepts consists in the “reading of some other good books accompanied by a precise analysis”. Here Gödel essentially means the reading of the books of some of his contemporary colleagues on specialized matters such as mathematics, logic, physics and so on, as well as treatises and manuals concerning specific domains such as jurisprudence, history or theology.

There is actually a huge amount of remarks on the works of logicians, philosophers of mathematics and of physics and in particular (in *Max Phil* IX-XIV) on Frege, Peano, Russell, Carnap and Einstein, as well as remarks on different domains of humanities and on theology. It is impossible to give here more than a sketch of the subjects discussed systematically by Gödel. Nevertheless, with respect to the material that we have worked on, we can mention at least four important subjects:

⁴⁴ Wang 1996, p. 297, n° 9.2.3.

- (1) Gödel is trying to advance a theory of concepts that does not depend on type theory and methods of stratification. Such a theory should offer a new perspective for understanding logic on the basis of its foundations and to avoid the problems about intensional paradoxes in logic that are still not yet solved.
The relation ‘esti’ is supposed to entail an explicit application of concepts to their arguments, i.e. an application of a concept to itself, and it is thought to be reflexive (with a few exceptions). As Gödel writes in his article from 1944,⁴⁵ a solution to the intensional paradoxes shall not forbid all applications of concepts to themselves. This is important to him because it belongs to the nature of a concept that it may be applied to itself and this distinguishes them from objects. He is convinced that an intensional higher order logic that includes such an ‘esti’-relation would be a suitable instrument to characterise thinking and the sciences in general. But such a solution would presuppose that one is able to identify the applications of concepts to themselves that do lead to paradoxes, and this is not the case. Frege and Russell’s works are very often discussed in relation to these matters.
- (2) The notion of self-referentiality is important for Gödel when it comes to arguing against materialism and against reductionism in the philosophy of mind. It is a figure of thought that is suitable for thinking about the differences between mind and machines and also about the differences between humans and animals for example. Self-referentiality and self-applicability are crucial in thinking about the difference between mathematics and logic as well as in thinking about meaning and proofs. Gödel explores them in different subjects and scientific areas in order to get a grip on them. Not surprisingly the subject is also vital for him in the domain of philosophy of mind and in the analysis of emotions. Emotions are for him, as they were for Leibniz also, a starting point for arguing against the mechanisation of nature and for an “ensouling of matter”. They are also the occasion to reflect upon the concepts of consciousness, and also at various points that of sub-consciousness. The diverse works on the psychophysical problem of such thinkers as Russell, Schlick and Carnap are in the background of such remarks.
- (3) The notion of time is most interesting for Gödel because it is a subject that connects the humanities with the sciences. Therefore he engages with it quite often and quite intensely. This is also, as already mentioned, true for the concept of force. His transdisciplinary approach is to contemplate ‘force’ as a notion in physics (gravitation and quantum mechanics), as a notion in psychology (affects and emotions) and as a notion in biology, albeit he has a specific interest in physics concerning the concept of force. He is looking for an interpretation of the concept that would allow him to align the theories of relativity and quantum mechanics. Besides that the preoccupation with quantum of light gives Gödel an opportunity to reflect on the differences between light and matter. Einstein’s works and the literature on quantum mechanics constitute the background of many of the Gödelian remarks on these subjects.
- (4) The analysis of definitions for concepts and objects is another important topic relating the questions about intensional and extensional aspects of concepts to the

⁴⁵ Gödel, “Russell’s Mathematical Logic”, *CWII*, pp. 119-141.

problem of evidence. Gödel discusses in several places the problems of definition of mathematical notions, compares different approaches to them and relates them to the problem of the nature of proof. The work of Peano and Brouwer are the frame for such reflexions.

The fourth insight into the content of the *Max Phil* highlighted by the *Bemerkung* above comes from the very last part of it, where Gödel mentions the studying of languages as a useful tool for the analysis of the uppermost concepts. The intensional competences involved in the learning of languages opens up to him a wide range of observations including morphology, phonology, syntax and semantics. The fact is that natural languages represent for him a concrete example of combinatorial tools, which are supposed to be images of the infinite possibility of combinations of objective concepts. Words and concepts are so related that, as Gödel says, even the finite combinatory is an image of God.

Other problems which he deals with, starting from the analysis of language, concern the theory of knowledge. Gödel contemplates for example the notion of life, the continuities between humans and animals as well as the language-capacities of animals, their ability to reason and their status of consciousness.

These first insights into Gödel's philosophy might give an impression as to how far his philosophical remarks are related to each other in a systematic way although they do not present a systematic treatise. The remarks follow a certain subject, drop it, and then take it up again after having dealt with several other topics, and so on.

Once the philosophical remarks by Gödel have been edited critically we will be able to say a lot more about Kurt Gödel's philosophy as a whole. In addition to this, one will then also have access to specific discussions of philosophical and scientific problems that are high points of thinking, and are—despite or perhaps thanks to the 17th century metaphysical framework—highly relevant to ongoing debates today.

References

- ATTEN van, Mark (2006) "Two Draft Letters from Gödel on Self-knowledge of Reason", *Philosophia Mathematica*, (III) 14, pp. 255-61.
- CROCCO, Gabriella (2012) "Gödel Leibniz and Russell's Mathematical Logic", in *New essays on Leibniz reception in philosophy of science 1800-2000*, ed. by Krömer, Ralf and Chin-Drian, Yannick, Basel: Birkhäuser, pp. 217-256.
- DAWSON, Jr., John W. and DAWSON, Cheryl A., (2005) "Future Tasks For Gödel Scholars", *Bulletin of Symbolic Logic*, 11, 2, pp. 150-171; reprinted in Feferman, Solomon, Charles, Parsons, Simpson, Stephen G., eds., (2010), *Kurt Gödel, Essays for his Centennial*, Cambridge: Cambridge University Press, pp. 21-42.
- ENGELN, Eva-Maria (2013) "Hat Kurt Gödel Thomas von Aquins Kommentar zu Aristoteles' *De anima* rezipiert?", *Philosophia Scientiae* 17(1), pp. 167-188.
- FEFERMAN, Solomon (2005) "The Gödel Editorial Project: A Synopsis", *The Bulletin of Symbolic Logic*, 11, 2, pp. 132-149.
- GÖDEL, Kurt (1986) *Collected Works*, vol. I: Publications 1929-1936, ed. by Feferman, Solomon, Dawson, John W. Jr., Kleene, Stephen *et al.*, Oxford: Oxford University Press.

- GÖDEL, Kurt (1990) *Collected Works*, vol. II: Publications 1938-1974, ed. by Feferman, Solomon, Dawson, John W. Jr., Kleene, Stephen, *et al.*, Oxford: Oxford University Press.
- GÖDEL, Kurt (1995) *Collected Works*, vol. III: Unpublished Essays and Lectures, ed. by S. Feferman, J. W. Dawson Jr., W. Goldfarb, *et al.*, Oxford: Oxford University Press.
- GÖDEL, Kurt (2003a) *Collected Works*, vol. IV: Correspondence A-G, ed. by Feferman, Solomon, Dawson, John W. Jr., Goldfarb, Warren, *et al.*, Oxford: Oxford University Press.
- GÖDEL, Kurt (2003b) *Collected Works*, vol. V: Correspondence H-Z, ed. by Feferman, Solomon, Dawson, John W. Jr., Goldfarb, Warren, *et al.*, Oxford: Oxford University Press.
- HADOT, Pierre (2002) *Exercices spirituels et philosophie antique*, Paris: Édition Albin Michel.
- KENNEDY, Juliette (2011) "Kurt Gödel", *The Stanford Encyclopedia of Philosophy* (Fall 2011) Edition, E. N. Zalta, ed. URL = <http://plato.stanford.edu/archives/fall2011/entries/goedel/>.
- PARSONS, Charles (2010) "Gödel and Philosophical Idealism", *Philosophia Mathematica* 18, pp. 166-192.
- TIESZEN, Richard (2011) *After Gödel: Platonism and Rationalism in Mathematics and Logic*, Oxford: Oxford University Press.
- WANG, Hao, (1974) *From Mathematics to Philosophy*, London: Routledge Kegan & Paul.
- WANG, Hao (1987) *Reflections on Kurt Gödel*, Cambridge, Mass.: The MIT Press.
- WANG, Hao (1988) *Beyond Analytic Philosophy: Doing Justice to What We Know*, Cambridge, Mass.: The MIT Press.
- WANG, Hao (1996) *A Logical Journey. From Gödel to Philosophy*, Cambridge, Mass.: The MIT Press.
- WHITEHEAD, Alfred North, RUSSELL, Bertrand, eds., (1910, 1912, 1913) *Principia Mathematica*, 3 vols., Cambridge: Cambridge University Press.
- WITTGENSTEIN, Ludwig (1994) *Philosophische Bemerkungen*, Wiener Ausgabe, ed. by Nedo, Michael, Wien: Springer.