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Logic and Biology: The Correspondence Between Alfred Tarski and Joseph H. Woodger

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Abstract

This article makes available some early letters chronicling the relationship between the biologist Joseph H. Woodger and the logician Alfred Tarski. Using twenty-five unpublished letters from Tarski to Woodger preserved in the Woodger Papers at University College, London, I reconstruct their relationship for the period 1935–1950. The scientific aspects of the correspondence concern, among other things, Tarski’s reports on the work he is doing, his interests, and his — sometimes critical but always well-meaning — reactions to Woodger’s attempts at axiomatizing and formalizing biology using the system of *Principia Mathematica*. Perhaps the most interesting letter from a philosophical point of view is a very informative letter on nominalism dated November 21, 1948. But just as fascinating are the personal elements, the dramatic period leading to the second world war, their reaction to the war events, Tarski’s anguish for his family stranded back in Poland, the financial worries, and his first reports on life in the East Coast and, as of 1942, at the University of California, Berkeley.

1. Introduction

There is no question that the publication of *Logic, Semantics, Metamathematics* [47] (henceforth LSM) greatly increased Tarski’s visibility beyond the circle of specialists. The collection came about through the devotion of Tarski’s friend, Joseph H. Woodger, known to his friends as “Socrates”. In the “Author’s acknowledgements”, dated August 1955, Tarski wrote:

It is a rare privilege for an author to see a volume of his collected papers published during his lifetime, and especially so if the papers be translated into a single language from originals in a number of other languages. I cannot therefore but be deeply moved by the appearance of this volume and by the thought of the many and great sacrifices which its publication has laid upon my friend, Professor Joseph H. Woodger. For five long years he has devoted to this work an immense amount of effort and time, which otherwise could have been used for fruitful research in his chosen field, theoretical biology and its foundations. [47, page *xi*]

After pointing out the difficulties involved in the task of a translator, Tarski continued by saying:

The realization of the difficulties involved makes me feel all the more indebted to him whose initiative, devotion, and labour have brought this volume into existence. [47, page *xii*]

The translation of the articles was indeed a complicated affair which involved several young and promising logicians, including C. C. Chang, A. C. Davis, J. Kalicki, R. Montague, J. Myhill, D. Rynin and D. Scott. At times the situation got out of hand, as, for instance, when Dana Scott decided to leave the Ph.D. program at Berkeley and move to Princeton on account of Tarski's overbearing demands [9, page 218]. At other times tragedy struck, as in the case with the untimely death of Jan Kalicki in 1953. One day an article on the history of the publication of LSM (both in its first and second edition) will have to be written. Fortunately, the archival documents are there waiting to be used. But this article is not about LSM.¹ It is rather about the friendship and intellectual partnership between Tarski and Woodger. While this friendship extended during and after the publication of LSM, my focus will be restricted to the period leading from the first meeting of Tarski and Woodger in 1935 to the beginning of the plans to edit and translate a collection of Tarski's articles in 1950 (which was published as LSM in 1956).

¹ I am happy to point out a connection between my investigations on Tarski and my Pasternak studies. The editor at Clarendon Press who followed the production of LSM, Dan Davin, also appears in connection to the smuggling of *Doctor Zhivago* from Peredelkino to Oxford in late 1948 (see [24]).

The period 1935–1950 is in my mind of special importance. First of all, the loss of Tarski’s belongings in Warsaw has left us with precious little information concerning his activities before his move to the USA in 1939. Thus, the extensive correspondence with Woodger during this period is a welcome addition to our knowledge of the pre-American Tarski. The correspondence with Woodger for the period 1950–1970 is also very extensive and contains all the exchanges concerning the production and publication of LSM. Nevertheless, I think that the earlier correspondence is more revealing on a scientific and personal level. The scientific aspects concern, among other things, Tarski’s reports on the work he is doing, his interests, and his — sometimes critical but always well-meaning — reactions to Woodger’s attempts at axiomatizing and formalizing biology using the system of *Principia Mathematica*. Perhaps the most interesting piece from a philosophical point of view is a splendid letter on nominalism dated November 21, 1948 ([Letter 23](#)). But just as fascinating are the personal elements, the dramatic period leading to the second world war, the anguish for his family stranded back in Poland, the financial worries, the reaction to the war events, and his first reports on life on the East Coast and, as of 1942, at the University of California, Berkeley.

I consider this publication mainly as a contribution to Tarski’s biography. We already have the splendid 2004 biography by Feferman and Feferman [9]. But the Fefermans had a preference for interviews over archival material. In my opinion, a fuller biography of Tarski can still be written but it will have to use many untapped archival resources. For instance, the Woodger Papers (see [6]) and the extensive correspondence between Tarski and Woodger were not exploited in their biography. This is not to criticize what previous authors achieved but only to point out that more can be done.

I begin by introducing the main actors of the story, Joseph H. Woodger and Alfred Tarski, recount some of the key moments of their friendship and collaboration, and conclude with a short summary of the contents of the letters which form the bulk of this article. More detailed explanatory comments are added as footnotes to the letters.

Overall, I believe that the correspondence between Tarski and Woodger is an important human and scientific document about the vicissitudes of doing science during one of the most challenging periods of the twentieth century.

Acknowledgments. I would like to thank Jan Tarski for granting permission to publish Alfred Tarski's letters and the archivists in charge of the Woodger Papers for their help. I am also grateful to Nicholas Currie who helped me with the research. Many thanks also to Jarrett Dury-Agri who transcribed the letters in German. Many thanks also to Arianna Betti who shared with me some of her Woodger research. Finally, I am very grateful to Richard Zach for several very useful comments to a previous version of this paper.

Added in proof: I was recently able to get hold of a letter from Tarski to Woodger, dated May 10, 1949. Ideally this should have gone between [Letter 24](#) and [Letter 25](#), but it was not feasible to do so at this late stage. The letter is short and expresses Tarski's interest in the application of algebra to genetics and his gratitude to Woodger for the latter's intention to dedicate [58] to him. Finally, Tarski informs Woodger that he had in principle accepted to deliver the Shearman lectures in spring 1950. I am grateful to Dan Mitchell (Special Collections, University College London) for his helpfulness in providing me with a scan of the letter.

2. Joseph Henry Woodger

Joseph H. Woodger was born on May 2, 1894, and died on March 8, 1981. He studied at University College London from 1911 to 1922.² In 1912 he received a Gold medal in Zoology and in 1913 a Silver medal in Physiology. In 1914 he obtained his Bachelor of Science degree and the Derby Research Scholarship. In 1915 he voluntarily enlisted in the army. In 1919 he was demobilized and was able to use the Derby Research Scholarship to continue his research at University College, where he was first Assistant and then Senior Assistant in Zoology (1919-1921). In 1922 he was appointed Reader in the department of biology at Middlesex Hospital Medical School in London. There he rose through the ranks and was eventually promoted professor in 1947. He became emeritus at the same institution in 1959. His early research was mainly in embryology and cytology.

² I found [10, 29, 27] quite useful for the biographical details on Woodger's life. In addition, there is a brief CV that Woodger wrote for Neurath for inclusion in *Erkenntnis*. It is contained in the letter from Woodger to Neurath dated November 28, 1935 [2]. For a list of the archives mentioned in the article see the Archives list before the Bibliography.

Woodger had an excellent command of German, a language he had studied on his own in the early twenties and then perfected during the Spring term 1926, which he spent in Vienna studying under Hans Leo Przibram at the Institute for Biological Research. This stay in Vienna is credited for the “philosophical” turn in Woodger’s career.

His 1929 book *Biological Principles* [53], published in the renowned series edited by C. K. Ogden,³ is one of the most important contributions to the philosophy of biology before the field exploded in the late 1960s. This book earned him in 1930 a Doctor of Science Degree in the Principles, Methods, and History of Science at University College, London. Woodger’s work in biology and philosophy of biology (see [60] for a list of his publications) has been severely criticized, but a recent reevaluation [27] shows that much of the negative attitude towards his work was unjustified. See [18] for more on his philosophical positions, in particular with respect to nominalism.

Woodger met Rudolf Carnap in England in September 1934.⁴ He was very interested in the activities of the Unity of Science movement organized by Carnap and Otto Neurath.⁵ Woodger followed and participated in its activities. But he was far from an uncritical follower, and certainly no reductionist. His aim was to lead the way towards unity in biology through a formalized approach to the discipline (see below for how he discovered formal logic). He participated in the first Congress for the Unity of Science in Paris in 1935, and there he met Alfred Tarski. He was also present at the third International Congress for the Unity of Science (29–31 July, 1937, Paris) and gave a talk titled “Unity through formalization” [33, page 423]. In the same year he published *The Axiomatic Method in Biology* (Cambridge University Press, 1937) [54]. In 1938 he obtained a scholarship from the Rockefeller Founda-

³ I am referring to the International Library of Psychology, Philosophy and Scientific Method. It was published by Kegan Paul, Trench, Trubner & Co. and it included, among many other important titles, Wittgenstein’s *Tractatus Logico-Philosophicus*.

⁴ His correspondence with Rudolf Carnap is preserved in the Carnap Papers at the University of Pittsburgh [1] and in the Woodger Papers at University College, London [5]. Carnap’s diaries also record a joint vacation in August 1934 where Woodger appears to have been quite smitten by Carnap’s wife Ina.

⁵ His correspondence with Otto Neurath is preserved in the Neurath Papers at the Noord-Hollands Archief, Haarlem (320 Woodger, J. H. 1935-1941) [2]. It contains 20 letters from Woodger and 29 from Neurath. Correspondence between the two is also preserved in the Woodger Papers at University College, London [5].

tion and visited Chicago and Yale. At the latter institution he worked with Clark Hull on the formalization of Hull's psychological theories.⁶

In the summer of 1938, Woodger participated in the fourth International Congress for the Unity of Science held at Girton College, Cambridge (14–19 July); his talk was titled “The Formalization of a Mathematical Theory” [33, page 427]. In September 1939, he attended the fifth International Congress for the Unity of Science, held at Harvard University [33, pages 429–433]. (This was the congress that saved Tarski's life — more on that below). In the same year, Woodger's monograph *The Technique of Theory Construction* [56] appeared as an installment of the International Encyclopedia of Unified Science.⁷ In 1949 he was chosen to give the Tarner Lectures at Trinity College, Cambridge. These were developed into his 1952 book *Biology and Language: An Introduction to the Methodology of the Biological Sciences Including Medicine, The Tarner Lectures for 1949-1950* [58].

Woodger played an important role in the development of philosophy of science in England, especially through “The Theoretical Biology Club”, which he organized between 1935 and 1952 (see [29]). Woodger and some of the other members of “The Theoretical Biology Club” joined the Philosophy of Science Group that in turn became the British Society for the Philosophy of Science.

⁶ Carnap wrote to Neurath on March 21, 1938: “Woodger hat in Besprechungen mit Hempel, Helmer und mir berichtet, was er bei Hull gearbeitet hat. Es handelte sich um eine ganz spezielle psychologische Theorie auf Grund gewisser Experimente über Silben[reih]en. Die ursprünglichen Formulierungen von Hull waren ausserordentlich unklar. Mit vieler Mühe hat dann Woodger es fertig gebracht, Hull zu verstehen, oder vielmehr, Hull dahin gebracht, daß er sich selbst darüber klar wurde, was er selbst, eigentlich damit gemacht hatte. Dein Gefühl, daß es sich hierbei um verfrühte Symbolisierung handelt, scheint mir ziemlich berechtigt. Trotzdem sind solche einzelnen Versuche ganz interessant. Im Ganzen glaube ich überhaupt wie Du, daß in den meisten Gebieten der empirischen Wissenschaft die Versuche zu einer Symbolisierung heute noch verfrüht sind.” [1, RC 102-54-36]. See also [55].

⁷ Hempel wrote to Neurath on 12 December, 1938 [2]: “Anbei endlich Bemerkungen zu Woodger: Ein Exemplar schicke ich direct an ihn. Eine sehr sorgfältige und solide Arbeit und viel klarer dargestellt als ich gedacht hatte; auch viele allgemeinere Fragen, die dem Leser auftauchen mögen, sind nett gesprochen. Aber daneben wohl zuviel Formelmateriale, das keiner liest.” In 1945 Woodger made an important contribution to comparative morphology (see [57]).

3. Alfred Tarski

Alfred Tarski (1901-1980) is better known, at least by the readers of this Journal, and I will be briefer on the biographical details (for a complete biography see [9]). Tarski was born and grew up in Warsaw, where he earned his Ph.D. in mathematics at the University of Warsaw under the direction of Leśniewski. Between 1925 and 1939, he held, at the same time, positions as professor at the Zeromski high school in Warsaw and as Docent and Adjunct Professor at the University of Warsaw.

An important string of results in the 1920s brought him to the attention of the international mathematical community, with the Banach-Tarski paradox being perhaps the best known. In seminars at the University of Warsaw during the period 1927–1929, Tarski extensively investigated the technique of elimination of quantifiers for proving completeness and decidability of axiomatic theories. His famed result on the completeness of elementary algebra and geometry, making use of Sturm’s theorem (see [32] and [9]), was the crowning jewel of these investigations. Its tortured way to publication is well documented in the letters between Tarski and Woodger.

By the end of the 1920s, Tarski had achieved great visibility and was in touch with some of the most important logicians and philosophers of science of the time, including Carnap and Gödel. His article on the definition of truth (Polish 1933, German 1935; see [34]) was a landmark that drew much attention from logicians and philosophers alike. His groundbreaking work in the 1920s and the 1930s led to the foundation of semantics and to what later became known as model theory.

During the 1920s and 1930s, Tarski was heavily involved with two major scientific groups. The first was the Polish logicians and philosophers, who are known under the name of Lvov-Warsaw school (see [52] and [12]). The second was the group centered around Schlick, Neurath, and Carnap in Vienna, the so-called logical empiricist movement. He also actively participated in their activities and discussions. In 1935 at the first Congress for the Unity of Science in Paris he contributed several talks on semantics. He was in Paris again in 1937 for the Third International Congress of the Unity of Science, where several private meetings were organized to discuss the nature of truth with, among others, Carnap, Lutman-Kokoszyńska, Neurath, etc. Tarski’s extensive correspondence with Neurath on the alleged metaphysical elements

hidden in Tarski's definition of truth shows how seriously Tarski engaged with the logical empiricists (see [20]).

In a letter to Neurath dated April 28, 1936,⁸ Tarski claims to be very busy since a very large mathematical book that he is co-authoring with Lindenbaum should soon appear. As it transpires from a letter from Tarski to Popper dated January 2, 1936,⁹ this was a book on set theory (which certainly went back to a joint article Tarski and Lindenbaum wrote in 1926). The same information is found in the letter from Tarski to Woodger dated March 15, 1936 (Letter 1). Regrettably this book was lost to posterity.

In September 1939, while he was in Cambridge (Massachusetts) for the fifth International Congress for the Unity of Science, Poland was invaded and Tarski was forced to stay in the USA. For that academic year, he received a temporary appointment at Harvard University (1939–1940). It is during this stay at Harvard that Carnap, Tarski, and Quine had a semester of intense discussion which included, among other topics, much reflection on how to develop logic and mathematics nominalistically (see [18, 19, 11]).

After a temporary appointment at the College of the City of New York (1940–1941), and a membership at The Institute for Advanced Study in Princeton (1941–1942), Tarski was offered a lectureship at the University of California at Berkeley in 1942. He was promoted to Associate Professor in 1943 and to Professor in 1944.

Despite all the moving around, the 1940s were a remarkable decade for Tarski's scientific activities. He published several articles and four books: *Introduction to Logic* [40] in 1941, *Direct Decomposition of Finite Algebraic Systems* (with Jónsson) [14] in 1947, *A Decision Method for Elementary Algebra and Geometry* [44] in 1948, and *Cardinal Algebras* [45] in 1949.

4. The relationship between Tarski and Woodger

Tarski and Woodger met for the first time at the first Congress for the Unity of Science held in Paris in 1935.¹⁰ Tarski gave, among others, an influential

⁸ The letter is preserved in [2].

⁹ The letter is preserved in [3].

¹⁰ Popper [28, page 108] claims that Woodger became acquainted with the importance of Tarski's work through the lectures Popper gave in England in 1935. However, those

talk on logical consequence. Although the official program does not list a talk by Woodger, he definitely gave one on the formalization of biology (see [29]). Woodger himself in 1970 reminisced:

At this stage I then began to construct my first biological axiom system and by the time this was written up for publication the great event of my first meeting with Alfred Tarski took place. I was invited to read a paper at an international congress to be held in Paris, and chose for my subject a brief exposition of my new system. After my lecture Tarski spoke to me about what I had said and appeared to be pleased by it and interested. I therefore ventured to ask his help in reading and criticizing this first fruit of my efforts to use *Principia mathematica*. [61, pages 482–483]

As we shall see, the first letter we have — dated March 15, 1936, see [Letter 1](#) — is Tarski’s reply to Woodger’s request for help in his formalization of biology. In the same letter, Tarski refers to the talk Woodger gave in Paris.

They met again in Warsaw in 1936.¹¹ From the context it is clear that Woodger must have gone to Poland after Tarski’s second extant letter, dated May 23, 1936 ([Letter 2](#)). Indeed, in the conclusion to that letter Tarski says that it would be nice if Woodger could at some point visit Poland. Woodger visited Tarski in Poland three times, as he mentions in [61]. However, he does not provide the dates. There was definitely another visit around the end of 1938 / beginning of 1939. During his visits Woodger also became acquainted with Andrzej Mostowski.¹² According to [61], Tarski visited him in England in 1937, 1950, 1953, and 1966.

lectures were given after the Paris Congress [13, pages 310–311] and Woodger had already heard Tarski speak there. It is however possible that the significance of Tarski’s work became clear to him through Popper’s lectures.

¹¹ I believe that Woodger’s first visit to Poland was in 1936, and not in 1935 as asserted in other sources, for instance in [10, page 4] and [27, page 263]. In his “translator’s preface” to [47], Woodger mentions that he “first enjoyed the hospitality of Professor Tarski in Warsaw in 1936”.

¹² Mostowski wrote to Woodger on December 16, 1938, extending an invitation to Woodger to go to Warsaw at the end of 1938 or at the beginning of 1939 (the letter is found in [5]). Woodger wrote to Neurath on January 10, 1939: “I have just returned from a visit to Warsaw where I have had an opportunity to talking to Tarski and his pupil

There is a gap of about two and a half years between the letters exchanged in 1936 and the resumption of the correspondence in 1939. Some letters were probably lost, and the fact that Tarski visited Tanhurst, Woodger's country house at Epsom Downs, in 1937¹³ shows a continuity of relations even during those years. One must also recall that Woodger was in the United States (Yale and Chicago) for the first half of 1938.

From that point on the correspondence is more regular and we can follow, through Tarski's letters to Woodger, the development of their friendship.

There is no question that Tarski had a very important impact on Woodger's intellectual life. Woodger's 1952 book *Biology and Language* [58] has the dedication "To Alfred Tarski. My friend and teacher". In a letter to Tarski dated September 6, 1968 (preserved in carbon copy in the Woodger Papers [5]), Woodger writes:

I feel I cannot thank you enough. The two greatest events in my intellectual life are: (i) finding Principia Mathematica in University College, London, Library; 1929; (ii) Meeting Alfred Tarski in Paris in 1935. These events set me on a course from which I have never since deviated.

The only extant letters for the period I am covering (1936–1948) are those from Tarski to Woodger and are preserved in the Woodger Papers at University College London [5]. The whereabouts of Woodger's letters to Tarski for the same period is unknown to me. They are not in the Tarski Papers at the Bancroft Library at the University of California, Berkeley.

5. A summary of the main contents of the correspondence

Let me now briefly summarize the main contents of the correspondence.

Mostowski about my monograph for the Encyclopedia. As a result of these discussions it may be necessary to make considerable modifications in my monograph, and Mostowski had very kindly undertaken to help me in this matter". [2] The monograph in question is *The Technique of Theory Construction* [56].

¹³ In a letter to Popper dated October 4, 1937, Tarski wrote: "Ich war in Paris auf dem Kongress, dann drei Wochen in England, bei Woodger" (the letter is found in [3]). In [2] there are two letters sent by Tarski to Neurath from Epsom Down (dated August 23 and 28, 1937, respectively).

5.1. *The letters from Poland: 1935-1939*

Woodger contacted Tarski in 1936 asking whether Tarski would comment on a typescript concerning his axiomatic work in biology (which led to the publication [54]). Tarski was overwhelmed with finishing a book with Lindenbaum on set theory (which was never published and of which, as I mentioned above, no trace remains) but was willing to look at Woodger's typescript within one month and thus encouraged Woodger to send it along. Woodger had discovered the three volumes of *Principia Mathematica* on the bookshelves of University College, London, in 1929. He had then developed the idea that conceptual analysis of the sort he had advocated in *Biological Principles* [53] was not sufficient to solve the problems in the philosophy of biology. Formalization of concepts used in various theories, including genetics, embryology, and taxonomy, seemed to Woodger what was needed and this approach culminated in [54].

Woodger went to Poland with his wife in the summer of 1936 and spent much time with Tarski. Woodger found it quite appealing that Tarski was rather critical towards the Vienna Circle. He also found Tarski's comments on the draft of his book so compelling that he decided to rewrite it entirely. This transpires from a letter from Eva Hempel to Carnap dated September 2, 1936:

We have been given all the details concerning the Polish family relationships. Sokrates [Woodger] recounted with evident joy that he liked Tarski because he is so critical of the Vienna Circle [...]. Moreover, Tarski made so many critical comments to his book — which was ready for printing — that he now wants to completely rewrite it; above all, he want to change the entire foundations.¹⁴

It was thus during the 1936 visit that Tarski and Woodger worked together on Woodger's 1937 book to which Tarski contributed an appendix [54, pages 161–172]. Indeed, Tarski's appendix was ready by January 1937.¹⁵

¹⁴ Alle Details der poln. Familienbeziehungen erfuhren wir. Sokrates [Woodger] erzählte mit sichtlicher Freude, daß ihm Tarski so gefiele, weil er so kritisch dem Wiener Kreis gegenüberstünde [...]. Im übrigen hat ihm Tarski so viele kritische Bemerkungen zu seinem Buch gesagt – das vorher druckreif war – daß er es nun völlig umschreiben will; vor allem die ganzen Grundlagen will er ändern. [1, RC 102-14-10].

¹⁵ In a letter to Popper dated January 1, 1937, Tarski complained about how the work for

In the preface to the book we read:

I have been extremely fortunate in securing the help of two such experts as Professor R. Carnap¹⁶ and Dr A. Tarski. I am deeply indebted to them both for the time and care they have devoted to reading my typescript. Thanks to their vigilance I have been saved from many blunders. I am especially indebted to Dr Tarski for his help in the choice of the foundations of my system. [...] Finally, my thanks are due to Dr Tarski and Mr W. F. Floyd for their help in proof reading.

Tarski was very interested in biology though he lacked the time to pursue this science in any depth. But among the things he found appealing about Woodger's project was the problem of trying to formalize some previously intuitively given notions. In his second letter to Woodger he wrote:

Above all, however, I have a great deal of interest in the task of capturing in a precise form a previously given intuitive content; problems of this kind have always intrigued me the most. (Tarski to Woodger, May 23, 1936, [Letter 2](#))

We recognize in this statement much of the drive for Tarski's famous results on the definition of truth, logical consequence, definability, etc.

As pointed out earlier, there is a gap of two and a half years between the letters exchanged in 1936 and the resumption of the correspondence in 1939. But as we have seen there were personal encounters during this period. In 1937, Tarski visited Woodger and his family at Epsom Downs. By 1939 the friendship they enjoyed is reflected in the letters: "Mein lieber Sokrates" is now Tarski's form of address (see [Letter 3](#) dated January 17, 1939). From the same letter we see that Woodger had been to Poland also at the very end of 1938 / beginning of 1939. And from it we also gather that Woodger had already started acting as translator for Tarski, for he had improved two of

the appendix to Woodger's book had forced him to stay up writing until 4-5 a.m.: "Es war eine Extra-Arbeit — im Zusammenhang mit Woodger's Buch (ein besonderes Kapitel, das vielleicht als ein Anhang zu Woodger's Buch unter meinem Namen erscheinen wird)."

¹⁶ As it emerges from Carnap's diaries, Carnap was reading the typescript of Woodger's book during their joint holidays in 1935.

his articles from Tarski’s “bad English” to Woodger’s “good English”. They were published as [38] and [39].

In the next letter, [Letter 4](#) dated January 28, 1939, Tarski expresses his disagreement with an interpretation of *Principia Mathematica* given by Woodger and then discusses the issue of a possible publication of a book with Allen Unwin. This was his *Introduction to Logic* that had appeared in Polish in 1936 [35] and in German in 1937 [36]. Meanwhile, as it transpires from [Letter 5](#) dated February 6, 1939, Woodger had sent Tarski the typescript of his contribution to the *Encyclopedia for the Unity of Science* [56]. At the same time, Woodger was also corresponding with Mostowski about his work on the formalization of biology, and Tarski was discussing these matters with Mostowski and reading the letters Mostowski and Woodger had been exchanging. In the Woodger Papers [5], there are ten letters from Mostowski dating from 1938–39. Tarski expressed much skepticism about the necessity for Woodger to formalize biology (“What forces you to practice a formalized biology?”) and pointed out that while axiomatizing biology was a fruitful problem, the formalization of the discipline by contrast seemed barren. And reflecting on his own work he said:

For instance, in my life I have extensively concerned myself with set theory and metamathematics; in addition, I have also devoted a lot of time to foundational questions, but I have never busied myself with a formalized set theory or a formalized metamathematics.

The second part of the letter concerns Woodger’s suggestion to contact Oxford University Press for the publication of Tarski’s *Introduction to Logic*. Furthermore, Tarski asks for help with the translation of another paper which contained a result that Tarski had already obtained in 1930. The paper was already written up in German. It turns out that this text was the one containing the completeness of elementary algebra and geometry, which was to have a complicated publication history [44, 46, 49]. Woodger did in fact translate the text into English. I don’t know whether the original German text is still extant somewhere.

The final part of the letter expresses frustration with Carnap who, while sending letters to Tarski inviting him to participate to the Congress for the Unity of Science in Harvard, never mentioned the financial aspects of the visit. Tarski will come back to this issue several times in the next letters.

In [Letter 6](#) dated March 5, 1939, much of the discussion is about plans to publish the logic textbook [36] in English with Oxford University Press. Woodger had apparently proposed to translate it himself, but Tarski warned him against using his time in this way. He also promised to send the German typescript containing his proof of the completeness of elementary algebra and geometry within 7–10 days. The final part of the letter contains references to pictures taken during Woodger’s recent visit to Poland.

Tarski sent his German typescript to Woodger as enclosure to [Letter 7](#) dated May 12, 1939. It had grown from a promised small article to one of about 40 pages. The plan by now, as detailed by Tarski, was to publish a longer version with the publisher Hermann in Paris and a shorter version in *Fundamenta Mathematicae*. Tarski also expressed his joy at being invited to give a plenary lecture at the International Congress of Mathematicians in Harvard in September 1940. This was for him much needed vindication of his worth against what he perceived, quite understandably, as a lack of attention to his results in Poland. Here is how he put it:

Above all, I would like to convey a piece of news—the first good piece of news that has concerned me for a long time. You may have heard that a large International Mathematical Congress will be held at Harvard University in the U.S.A. in September 1940. I have now received an invitation from the organising committee to deliver a lecture at the plenary session of the Congress. If you make it clear to yourself and recall that, as far as I know, I am the only one in Poland who has received such an invitation (although there are so many very good mathematicians and logicians here who have incomparably better working conditions), that I am not an official person (a high school teacher), that I have been mistreated for years by my colleagues in Poland, that on the other hand, only 15–18 lectures are to be given at the congress, including only two devoted to logic (Gödel’s and mine), you will surely admit that I have the right to regard this invitation as a great moral satisfaction.

Whether it will have more than moral significance for me is difficult to predict. It seems most likely to me that the war will break out much sooner and that my trip to the U.S. and the Congress itself will not come about.

Little did he know at that point that he was right concerning the beginning of the war but that the war would find him in the United States. The rest of the letter goes back to issues concerning the invitation to go to the United States and Quine's suggestion of combining the trip in September 1939 (Unity of Science Congress) with some teaching during 1939/1940 so as to then be already in the United States for the International Congress of Mathematicians in September 1940. Tarski was obviously concerned about such plans, especially given the imminent danger of a war.

[Letter 8](#) dated May 22, 1939, offers more reflections on the invitation to go to America for 1939/1940 and the complications that acting on such a possibility would entail, especially for his family.

It seems to me that it would be criminally reckless if I decided to follow Quine's "suggestions" and your advice. You don't take into account a circumstance. I have two parents, a wife and two children. And these are all people, and no marmots, no bears, etc.: they are not able to sink into sleep for a few months. If I decide to go to America and spend the next school year there (regardless of whether I get a job there), I have to inform the school that I am giving up my hours next year; as a result, a third of my income will be taken away as early as 1 August (i.e. the money I receive at school). I have to do the same at the university—I have to inform them that I do not intend to give lectures in the coming year; as a result, on 1 September, the second third of my income will be eliminated. The last third (i.e. the money I get in university for my adjunct position) will be eliminated on October 1st if I don't take up my duty at that time. My savings are enough for the passport, the visa, the trip to America and back and still for a one-month stay in America. So what will my family live on in September? My wife earns about 6.50£ a month, but that's too little for one person, let alone for five.—I could possibly do one thing: go to the U.S.A. to the Congress for the "Unity of science" with the firm resolution to return to Poland immediately after the Congress if I don't get a sufficiently well-paid job. But that would be a big risk—I would spend all my savings and would have great financial difficulties in the attempt to repeat an analogous journey in 1940 (and the Intern. Math. Congress is incomparably

more important and interesting to me than the Congress for the Unity of Science).

Tarski also had grim predictions about the imminent future:

In what I have written so far, I have refrained from mentioning the eventuality of the outbreak of war. A year ago and two years ago, everyone in England and in the West in general was convinced that war would break out in the near future; in Poland everyone was calm. It turned out that the Poles were right. I am afraid that the Poles are right now too. In any case, the prevailing view here is that the outbreak of war is inevitable in the near future. We were already afraid yesterday that the decisive moment has come (you have certainly read about the new excitements in Gdansk).

Poland was indeed invaded just a little over three months later, on September 1, 1939.

On June 28, 1939, in [Letter 9](#), Tarski acknowledges receipt of the translated typescript of his work on the completeness of elementary algebra and geometry. Tarski sent back two copies with instructions for corrections and asked that a dedication to his wife be included after the title. One copy was to be sent to the publisher Hermann in Paris and the other kept in Epsom Downs (where Woodger lived) for safekeeping. The letter then discusses more financial issues concerning the visit to the USA and arrangements for meeting there with Woodger.

Plans for the trip to the USA and the financial complications are also discussed in [Letter 10](#) dated July 7, 1939. Tarski at this stage was very annoyed about several aspects of his visit and was planning to cancel the trip. He did not do so because he would have lost the money he had already paid for the visa and the boat tickets. A remarkable passage concerns the humiliation he was subjected to at the US Consulate when he presented his “invitations” to lecture in the United States in order to obtain his visa.

“No, sir, you better not show us that! We know such “open invitations” very well. If the Americans really wanted to hear your lectures, they would start with raising the issue of money upfront in their invitation.”

In the following letter, [Letter 11](#) dated July 20, Tarski said that going to the USA under the present circumstances “will be one of the most unreasonable decisions of my life”. As unreasonable as the decision may have been, it ended up saving his life.

The account of Tarski’s participation in the 1939 conference at Harvard that emerges from the May-July 1939 letters ([Letter 7-Letter 10](#)) is in stark contrast from the picture described in [9, pages 106–108]. Reading the latter, one comes away thinking that saving Tarski was all Quine’s doing, and that Tarski’s hesitation was due to Tarski’s expectation to be appointed to Leśniewski’s chair. The Fefermans claim that “the crisis in Europe or anxiety about leaving his family in uncertain times were not the reasons, or at least not the major ones” [9, page 106] for Tarski’s hesitation. According to them, “the real reason” [9, page 107] was Tarski’s sense of entitlement to the Leśniewski’s chair.

But there is no mention of Leśniewski’s chair in the letters to Woodger. In contrast, the worries related to his family, his lack of financial resources, and the danger of the imminent war take center stage. The letters make vividly clear how hard the decision was for Tarski. He had to think of his wife, kids, and parents. He had no money to spare, and even the \$150 that he had been offered wouldn’t cover the trip. It was very unclear from what Quine wrote (see [Letter 8](#) from May 22) whether finding a job for the entire 1939/1940 year was at all feasible, or even what exactly Quine was suggesting or promising. One might even wonder whether Quine would have invited Tarski to the 1939 Congress if Tarski hadn’t already been invited to the International Congress of Mathematicians. After all, it was the organizers of the ICM that offered to pay for passage and suggested that giving lectures around the same time would provide more funding. [9] does not mention the invitation to the ICM. Despite all the potential invitations to lecture at various institutions that Tarski was getting, no one explicitly raised the issue of money.

Tarski describes the idea to go to America under the circumstances as “criminally reckless” and that everyone he had talked to in Poland thought the same! Finally, Tarski is explicit that he is aiming to go to America, and that is why he is trying to get his book translated and published in English (see [Letter 6](#) dated March 5). Even when he’s still thinking that he likely won’t go this time, he asks Woodger to take his “books” [money] to America and deposit them there. Once again, this seems to be in contrast with his alleged

desire to stay in Poland hoping to get the Leśniewski chair. Thus, the letters to Woodger dated May 12 ([Letter 7](#)), May 22 ([Letter 8](#)), June 28 ([Letter 9](#)), and July 7 ([Letter 10](#)) give us a more complete and accurate picture of the circumstances of Tarski's escape than hitherto available.

5.2. *Letters from the USA: 1939-1949*

With [Letter 12](#) dated December 27, 1939, we switch from German to English. Tarski, who had been living in the United States since September 1939, and could not go back to Europe, wrote in English from then on. He reports having been offered some employment, describes his steps towards regularizing his position in the United States, and finally refers to the lack of success in getting in touch with his family. The news he was receiving about Poland depicted a real “inferno”.

In [Letter 13](#) dated February 17, 1940, we find Tarski overworked, preparing to give sixteen invited talks at various Universities. While Hermann in Paris failed to send the proofs of the book on the completeness of elementary algebra and geometry, there was some good news concerning Tarski's *Introduction to Logic*, which would be published by the USA branch of Oxford University Press. Most importantly, he mentioned a plan engineered by Jørgen Jørgensen to help with the emigration of the Tarski family. Unfortunately, as mentioned in the next letter, [Letter 14](#) dated April 28, this plan came to nothing. It would be only in 1945 that Maria with the two children, Ina and Jan, would reach Tarski in the USA. Tarski complains of his unstable situation and of the anti-semitism and the “anti-foreigners” feelings he is encountering in the United States: “Logic is not in favour here, and the anti-semitism (and, more generally, the “anti-foreigners” feeling) is not essentially weaker than in Poland.” [Letter 15](#) dated September 5, 1940, mentions that he heard from Maria and that his family is in good health although “in very bad material conditions”. His professional life was still quite unsettled and he asks Woodger to make inquiries about his brother in law and his sister in law.

[Letter 16](#) dated March 19, 1941, continues to express distress for the situation of the family in Poland and for his own work situation in the United States. Tarski informs Woodger that Oxford University Press had just published *Introduction to Logic and the Methodology of Deductive Sciences* [40]. In contrast, the booklet on the “completeness of elementary algebra” had not appeared yet.

In [Letter 17](#) dated January 31, 1942, Tarski mentions that his situation is still unsettled even though he has received a Guggenheim fellowship for the year (“this is considered here a big honor, but does not bring much money”; things have not changed much!). More information on the successful reception of his logic textbook follows. Tarski also added some information to the effect that he is revising the draft of *The Completeness of Algebra and Geometry* with the indication that it will be published by Harvard University Press. It was not to be, at least not for a few more years and not with Harvard University Press.¹⁷

The first letter from 1942, [Letter 17](#) dated January 31, finds Tarski in Princeton. The second, [Letter 18](#) dated November 4, opens a new period in Tarski’s life, his arrival at the University of California, Berkeley. The description of Tarski’s impression of scientific work at Berkeley is too amusing not to be repeated here:

Berkeley is a beautiful place — one of the most beautiful I saw in my life. It is so charming here that people don’t seem to bother much about science. After all, life is so short, the weather here so delightful (no summer, no winter), the ocean so immense, the hills so green, the eucalyptus trees so tall — and mathematics is so hard a piece of work. Of course, there are exceptions.

The following letter, [Letter 19](#) dated December 5, 1943 conveys the anxiety due to the harrowing times (“my family becomes more and more desperate, and I have exhausted all possibilities of helping them”).

¹⁷ The first publication of the work, under the title *A Decision Method for Elementary Algebra and Geometry*, came out in 1948 published by The RAND Corporation [44]. In preparing the book for publication, Tarski was helped by J. C. C. McKinsey. The book was reprinted in a revised form in 1951 by the University of California Press in Berkeley [46]. The original page proofs for Hermann, the French publisher that had planned to bring out the book in 1940 but could not do so on account of the war, were published in 1967 by the Institut Blaise Pascal with a foreword by Tarski (see [49] and [50, pages 295–296]). All the footnotes are missing from the Hermann proofs but the dedication “To my wife” made it in. Tarski pointed out that “A comparison of the titles of the two monographs reveals that the center of scientific interest has been shifted to the decision problem from that of completeness”. The 1940 proofs emphasized the completeness of elementary algebra and geometry, whereas in the later versions decision methods occupy center stage. Woodger’s name does not appear in any of them.

[Letter 20](#) dated November 9, 1944, is understandably bitter about the events of the war and the possible consequences of Russian domination in Poland.

With the end of the war the Tarski family was reunited, and Tarski conveys the happy news to Woodger in [Letter 21](#) dated December 10, 1946. He also expresses great happiness about the publishing success of *Introduction to Logic and the Methodology of the Deductive Sciences*. The only letter from 1947, [Letter 22](#), describes a more relaxed Tarski occupied with gardening and reporting an impressive list of publications in logic and mathematics.

[Letter 23](#) dated November 21, 1948, is philosophically the most interesting in this entire correspondence, for it reveals important aspects of Tarski's nominalism (on this issue see [18, 19, 21, 22]).

Two more letters from 1949, [Letter 24](#) dated March 10, and [Letter 25](#) dated September 27, complete the selection. The 1949 correspondence does not add much and it concerns mainly the preparation for Tarski's trip to London where he had been invited to give the Shearman lectures. Tarski will see Woodger in England in 1950, and out of that meeting will emerge the project to publish a collection of Tarski's papers. This will then be the book that will see the light in 1956 as *Logic, Semantics, Metamathematics* [47].

6. The Tarski-Woodger correspondence: 1936-1950.

The letters in the following pages have been faithfully transcribed from the original. They display infelicities in German and English that I have not attempted to correct. Only in some cases that might have puzzled the reader I have added a [*sic*].

Letter 1. TARSKI TO WOODGER, MARCH 15, 1936.

Warszawa, den 15.III.36

Sehr geehrter Herr Prof. Woodger.

Selbstverständlich werde ich sehr gern Ihr Manuskript lesen.¹⁸ Die Probleme, die Sie in Ihrem Pariser Vortrag berührt haben, haben mich aufrichtig interessiert.¹⁹ Und überhaupt ist für mich die Biologie—neben der Logik—das interessanteste Gebiet der Wissenschaft; ich bedauere immer aufrichtig, daß ich zu wenig Zeit habe, um die Vererbungslehre, die mich besonders interessiert, näher studieren zu können.

Es liegt nur eine Schwierigkeit vor. Ich verfasse jetzt ein großes mathematisches Buch; gegen Mitte Avril [sic] muß ich spätestens ein Teil zum Druck abgeben.²⁰ Wenn Sie also wünschen, Ihr Manuskript gleich nach Ostern zurückzubekommen, so werde ich imstande sein, nur ziemlich flüchtig es durchzuschauen; könnte ich es dagegen noch paar Wochen (bis Hälfte Mai z.B.) halte, so würde ich es genau studieren.

Jedenfalls senden Sie mir, bitte, das Manuskript möglichst schnell zu.

¹⁸ This was probably a draft of what became [54].

¹⁹ The reference is to the lecture given by Woodger at the Congress of the Unity of Science in Paris. Popper, in his obituary of Woodger, described the impression left by the talk as follows:

I met Woodger first in Paris, in August or September 1935, at the ‘First International Congress for the Unity of Science’, organised by Otto Neurath. The great man of this congress was, no doubt, Bertrand Russell. And it was Woodger’s contribution to the congress, more than anybody else’s, which showed Russell’s merits as a philosopher of science: Woodger described his search for the tools needed to analyse the difficulties he had met in his attempts to construct a theoretical biology, and he described the help he had obtained from Whitehead’s and Russell’s *Principia Mathematica*. It was a moving and arresting and a very personal speech. [29, page 329]

²⁰ As I pointed out in Section 3, Tarski mentioned, in a letter to Neurath dated April 28, 1936 (see Footnote 8), that he was very busy since a very large mathematical book that he is co-authoring with Lindenbaum should soon appear. As it transpires from a letter to Popper dated January 2, 1936 (see Footnote 9), this was a book on set theory (which certainly went back to a joint article Tarski and Lindenbaum wrote in 1926). The letters to Popper are preserved at Hoover Library and Archives at Stanford; those to Neurath in the Neurath Papers at Haarlem.

Es gibt bei uns manche Logiker²¹, die ebenfalls für die Anwendungen der Logik großes Interesse haben; wenn Sie es erlauben, so werde ich Ihre Arbeit nicht nur selbst lesen, aber auch jemandem von diesen Kollegen zeigen.

Es ist mir höchst unangenehm, daß ich Ihre zweite Bitte nicht erfüllen kann: ich habe schon kein einziges Exemplar von meinem "Wahrheitsbegriff."²² In kurzer Zeit soll aber der ganze Band I. [in] der Zeitschrift "Studia Philosophica" erscheinen; ich hoffe dann den ganzen Band Ihnen zusenden zu können.

Ich danke Ihnen herzlichst für Ihre freundliche Einladung; wenn ich mal in London sein werde, so werde ich Sie sicher besuchen.²³ Ich hoffe, viel interessantes von Ihnen erfahren zu können.

Mit besten Grüßen

Ihr sehr ergebener

A Tarski

²¹ Tarski involved Mostowski in looking closely at Woodger's formalization of biology.

²² This was Tarski's work on the definition of truth [34], which had originally appeared in Polish in 1933. The German translation was published in *Studia Philosophica* (Volume 1 (1935), pages 261-405).

²³ Tarski visited Woodger in England for the first time in 1937.

Letter 2. TARSKI TO WOODGER, MAY 23, 1936.

Warszawa, den 23.V.1936

Sehr geehrter Herr Prof. Woodger!

Die Hälfte Mai ist schon vorbei und ich habe leider Ihre Arbeit noch nicht bis zum Ende gelesen. Meine Aufgabe erwies sich schwieriger als ich es vermutete. Die Schwierigkeiten sind verschiedener Natur; die Hauptschwierigkeit liegt aber darin, daß das Thema Ihrer Arbeit von meinem eigenen Forschungsgebiet so sehr entfernt ist. Mit Rücksicht auf den Charakter Ihres Werkes wäre es sinnlos, Ihren Gedankengang von rein formalem Gesichtspunkt aus zu verfolgen: meine Aufgabe, wie mir [es] scheint, besteht hauptsächlich darin, um zu prüfen, ob das Formale in Ihrer Arbeit dem Inhaltlichen adäquat ist, ob Ihre Definitionen und Sätze das treffen, was Sie treffen wollen. Da mir aber das Inhaltliche nicht gut bekannt ist, so versuche ich Ihr Werk mit einigen Biologen zusammen zu studieren,²⁴ die aber sehr wenig aus der Logik kennen; deshalb schreitet die Arbeit sehr langsam fort.

Das, was ich bis jetzt gelesen habe, reicht bereits hin, um die Wichtigkeit Ihres Werkes beurteilen zu können; umsomehr bedauere ich, daß ich Ihre Arbeit nicht in einer Zeit studieren kann, in der ich durch meine eigenen Arbeiten weniger in Anspruch genommen wäre. Es wird nicht übertrieben sein, wenn ich sagen werde, daß Ihre Arbeit ein der interessantesten Bücher ist, die ich im Leben gelesen habe.²⁵ Ihr Werk erscheint mir sogar unter rein deduktivem Gesichtspunkt wertvoll: Sie erörtern ja einen Typus der Relationen (die Relation Z ²⁶), der nie bis jetzt erörtert wurde, der aber sich zweifellos in verschiedenen Anwendungen als wichtig erweisen wird, und Sie entwickeln dabei einen ganzen Apparat zur Untersuchung derartigen Relationen; gewisse Konstruktionen sind sicher sehr geistreich (z.B. die Definition des Begriffs "completely cogenetic,"²⁷ wenn ich auch noch nicht ganz überzeugt bin, daß diese Definition sachlich zutreffend ist). Vor allem aber habe ich viel Interesse für die Aufgabe, einen anschaulich gegebenen Inhalt in eine präzise Form zu fassen; Probleme dieser Art haben mich immer am meisten gereizt.

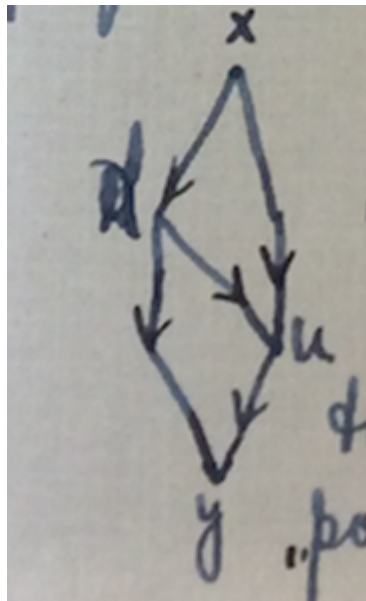
²⁴ I was not able to determine who were the biologists that Tarski contacted in Warsaw.

²⁵ This was no small praise and could be added to the list given by [27] to argue for the appreciation shown to Woodger's work by some of his contemporaries.

²⁶ No relation Z can be found in [54].

²⁷ See [54, pages 76 and 82].

An gewisse Schwierigkeiten bin ich bereits am Anfang des Buches angestossen, und zwar bei den Definitionen von Q_a und R_a in Section 1 des III. Kapitels.²⁸ Es scheint mir, daß diese Definitionen sachlich unrichtig sind: durch das Bestehen der Relationen Q_a und R_a wird das Vorkommen von “point of union” oder “point of division” nicht ausgeschlossen. Das erhellt [*sic*]—so scheint es mir—aus dem folgenden Schema:



Laut Ihren Definitionen gelten hier die beiden Formeln: $xQ_a y$ und $xP_a y$, nicht[s]destoweniger treten zwischen x und y sowohl “point of division” als auch “point of union” auf.

Es scheint mir, daß man den Begriff des “point of division,” bzw. “point of union” direkt definieren kann: x heißt z.B. “point of division,” wenn es solche y und z gibt, daß (1) $xZy.xZy. \sim (yZz). \sim (zZy)$ [*sic*] und (2) $\sim (\exists u).xZu.uZy.uZz$. Ich sehe aber noch nicht klar, ob diese Definition ganz paßt—daß hängt ja immer von den angenommenen Axiomen ab.

Ein Umstand wird sicher vielen Logikern und Mathematikern das Studieren Ihrer Arbeit erschweren: Sie operieren sehr viel mit Relationen, während die Mathematiker und auch diejenige Logiker, die nicht direkt an “Principia

²⁸ These are not found in [54].

Mathematica” anknüpfen, viel lieber mit den Klassen zu tun haben. Die Mathematiker sagen z.B. üblich: “eine Klasse α ist durch die Relation R geordnet” (oder sogar sprechen einfach, wenn auch nicht ganz exakt, über geordnete Klassen), während Russell und Whitehead den Ausdruck: “R ist eine Ordnungsrelation” ($R \in \text{Ser}$) gebrauchen. Die Begriffsbildung der Principia Mathematica hat sicher ihre Vorteile; da Sie aber fast ausschließlich mit konstanten Relationen (z.B. Z, Pt) und ihren Unterrelationen operieren, so wäre es in manchen Fällen bequemer, die Relationen durch die Klassen, ferner die Klassen von Relationen durch die Klassen von Klassen u.s.w. zu ersetzen.

Schreiben Sie mir, bitte, was ich nun weiter machen soll: soll ich Ihnen Ihre Arbeit sofort absenden samt den Bemerkungen, die ich schon jetzt machen kann, oder kann ich die Arbeit noch länger halten und bis wann nämlich (geben Sie, bitte, den präklusiven Termin an).

Ich würde mich sehr freuen, wenn ich einmal länger mit Ihnen über verschiedene meritorische Probleme sprechen könnte, die nur beim Lesen Ihres Buches aufgetaucht sind. Werden Sie in Kopenhagen sein?²⁹ Ich weiß noch nicht, ob es mir gelingen wird dort zu kommen. Es wäre sehr nett, wenn Sie einmal, z.B. während der Sommerferien, nach Polen kommen wollten.³⁰ Wir haben sehr schöne Hochgebirge—das Hohe Tatra; die Anzahl der Ausländer, die z.B. nach Zakopane (bei diesen Gebirgen) kommen, vergrößert sich jedes Jahr. Wegen der Walutabedingungen [sic] ist es viel schwieriger für einen Polen nach Ausland zu kommen als umgekehrt.

Wenn Sie einmal Fr. Stebbing³¹ und Popper³² sehen werden, fragen Sie sie, bitte, ob sie meine vor paar Monaten gesandten Briefe bekommen haben.

²⁹ This refers to the Second International Congress for the Unity of Science that took place in Copenhagen from 21 to 26 July, 1936. Neither Tarski nor Woodger appear in the list of speakers (see [33, pages 416–418]). Tarski wrote to Neurath on June 6, 1936, that he was not able to solve the financial complications and had to abandon the idea of going to Copenhagen for the Congress.

³⁰ This clearly indicates that Woodger had not visited Poland in 1935 as erroneously asserted in some of the secondary literature. In a letter to Popper dated October 2, 1936 [3], Tarski says: “Woodger, der im letzten Sommer paar Wochen in Polen, in Tatra war.”

³¹ Susan Stebbing (1885-1943) greatly encouraged Woodger at the end of the twenties in his pursuit of formal studies (see [61]). There are several letters by Stebbing in the Woodger Papers dating from the late 1920s.

³² Popper claims in [29, page 330] to have drawn Woodger’s attention to Tarski’s work.

Mit besten Grüßen
Ihr aufrichtig ergebener
A. Tarski

mit rotem Bleistift umgerissen: \square . Eine derartige Stelle enthält manchmal einige Varianten in roten Klammern (), und Du kannst eine von diesen Varianten wählen; die Worte in gewöhnlichen Klammern () gehören dagegen zum Text oder genauer zu der Textänderung, die ich vorschlage.

Das MS. meiner zweiten, von Dir übersetzten Arbeit habe ich bereits der Redaktion der “Fundamenta Mathematicae” übergeben.³⁶ In die Einleitung dieser Arbeit habe ich folgenden Satz eingeschaltet:

I should like to note that Corollary 9 being chronologically the first among the results which will be given here was obtained and has been kindly communicated to me by S. Leśniewski as early as 1929.

Ist das sprachlich korrekt?

Ich habe schon eine Antwort auf meinen Brief von Allen und Unwin³⁷ bekommen, eine Antwort, die teilweise unverständlich ist; sie versprechen mir aber in nächsten Tagen ausführlicher zu schreiben.

Sonst nicht neues. Die Ferien sind schon leider vorbei!

Herzliche Grüße für Dich, für Eden³⁸ und Kinder! Auch Marie³⁹ läßt Dich herzlich grüßen

Dein
Alfred

P.S. Denkst du nicht, daß es besser wäre im Titel meiner Arbeit “Systems of Logic” an Stelle von “. . . Logical Systems” zu setzen?⁴⁰

³⁶ This refers to [39].

³⁷ This concerned a translation of Tarski’s *Einführung in die mathematische Logik* into English.

³⁸ Eden was Woodger’s wife.

³⁹ Maria was Tarski’s wife. It is unclear why Tarski uses the form “Marie”

⁴⁰ The published version of [38] uses “systems of logic”.

Letter 4. TARSKI TO WOODGER, JANUARY 28, 1939.

Warschau, den 28.I.39

Mein lieber Sokrates!

Habe meinen herzlichsten Dank für Deine Hilfe beim Fertigstellen meiner Arbeit über unentscheidbare Sätze.⁴¹ Aus Deinem Briefe sehe ich, daß Du Dir mehr Mühe dabei gegeben hast als es notwendig war: die Abschrift konnte ich ja selbst machen lassen. Falls Du das alte (event. sogar nicht endgültig korrigierte) Exemplar meiner Arbeit nicht mehr brauchst und falls es lesbar ist, sende es, bitte, Prof. Scholz (Universität, Logistisches Seminar, Münster i/W).⁴²

Den Brief von Mostowski⁴³ hast Du schon sicher bekommen; so viel ich weiß, wirst Du noch in kurzem einen "Appendix" zu diesem Brief erhalten. Damit, was Du in Deine, letzten Brief über Principia Mathematica schreibst, kann ich unmöglich übereinstimmen. Es scheint mir, daß alle Einzelheiten, die Du als spezifisch für Princ. Math. und zugleich wichtig für Anwendungen betrachtest, in zwei disjunkte (oder fast disjunkte) Klassen eingeteilt werden können: in solche, die für Princ. Math. charakteristisch, aber für Anwendungen irrelevant sind, und in solche, die für Anwendungen wichtig, aber keineswegs für Princ. Math. spezifisch sind. Zu der letzteren Klasse gehört z.B. der Gebrauch der Bezeichnungsfunktionen ("descriptions") und Funktoren wie $F(x)$ oder $R'x$ sowie gewisser damit zusammenhängender Begriffe (das Vor- und Nachgebiet einer Funktion oder Relation u.s.w.), zu der ersten Klasse dagegen gehört die Art und Weise, in der diese Bezeichnungsfunktionen in das System eingeführt werden, ihr Zusammenhang mit dem Operator $(\lambda x) \dots$

Aus einem Brief, den ich neulich von Allen & Unwin bekommen habe, ergibt sich, daß diese Leute als eventuelle Herausgeber meines Buches nicht mehr in Betracht kommen.⁴⁴ Es scheint, daß die englischen Verleger viel vorsichtiger

⁴¹ This is referring to [38].

⁴² Heinrich Scholz (1884-1956) is the philosopher and logician who founded the Münster School in Logic.

⁴³ Andrzej Mostowski (1913-1975) corresponded extensively with Woodger. His letters to Woodger are still in the Woodger Papers at University College, London [5].

⁴⁴ This confirms that the book in question was *Introduction to Logic*.

und unbeweglicher als deutsche und sogar als polnische sind. Oder vielleicht sind die Kosten des Verlags in England viel teurer? In Polen kann man so ein Buch wie mein (in polnischer oder in einer fremden Sprache) für 60-70 englische Pfund herausgeben (das Honorar des Autors und des Übersetzers nicht einbegriffen) und dabei nach einer Zeit viel Geld verdienen.

Bei mir nichts neues.

Herzliche Grüße für Dich und Deine Familie.

Dein Alfred

P.S. Kommt nicht im Endresultat der Lösung des Problems, das Du mir in Deinem letzten Brief mitteilst, ein Fehler vor? ist das Resultat nicht zu hoch?

Letter 5. TARSKI TO WOODGER, FEBRUARY 6, 1939.

Warschau, den 6.II.39.

Mein lieber Sokrates!

Besten Dank für Deinen Brief vom 30. Januar.

Leider habe ich Dein MS. für die Enzyklopädie⁴⁵ noch nicht gelesen und bin auch außerstande es in näher Zukunft zu lesen. Deshalb kann ich Dir nichts in verantwortlicher Weise in diesem Zusammenhang zuraten. Es scheint mir, daß Du gut und vernünftig machen wirst, wenn Du den Ratschlägen von Mostowski folgen wirst. So viel ich aus dem Gespräch mit Mostowski schließen kann, können seine Vorschläge den pädagogischen Wert des Buches nicht in geringsten Maße beeinträchtigen. Änderungen, die er vorschlägt, insofern sie dein System selbst (und nicht die Syntax des Systems) betreffen sind ja sehr gering und würden eher eine Vereinfachung als eine Komplizierung des Systems verursachen. Insbesondere würde ich an Deiner Stelle den Vorschlag berücksichtigen, der im letzten Mostowski's Briefe enthalten ist (ich habe diesen Ausweg speziell für die Zwecke Deines Buches ausgedacht!), und zwar würde ich auf die Einführung des "(1x)..." überhaupt verzichten und würde nur das Symbol "R'x" mittels Axiome von der folgenden (vereinfachten) Form einführen:

$$(w): wRy. \equiv .w = x \therefore \supset .x = R'y.^{46}$$

Ernster ist die Frage der eventuellen Umformungen, denen die Syntax Deines Systems unterworfen werden soll. Aber eben aus den pädagogischen Gründen würde ich den bisherigen Text der Syntax keineswegs bleiben lassen, ich würde das alles austreichen. Dagegen ist es für mich nicht klar, ob ich an Deiner Stelle den neuen Text der Syntax in der Mitte des Buches (d.h. in dem bisherigen Platz) oder am Ende in einem Appendix unterbringen würde.

Ich wiederhole noch einmal: wenn Du diese Zeilen liest, muß Du damit rechnen, daß ich Dein MS. nicht kenne. Die Zeilen, die Du in Deinem Brief

⁴⁵ This refers to [56], which contained a simplified version of the formalization of biology given in [54].

⁴⁶ Woodger followed the advice. See [56, def. 0.521] The symbol "R'y" should actually be "R'y". According to *30.01 in *Principia Mathematica* [51], it stands for the "descriptive function" "the R of y". See also [17].

den Principia Mathematica widmet, sind zweifellos sehr witzig. Steckt aber etwas ernstes in dem, was Du schreibst? Es ist unbestreitbar, daß man in diesem Moment kein logisches System zur Verfügung hat, das zugleich gut formalisiert, weit ausgebaut und den praktischen Anwendungen gut angepaßt wäre. Aber kann das Dich wirklich in Deiner wissenschaftlichen Tätigkeit hemmen?⁴⁷ Was zwingt Dich eigentlich dazu eine formalisierte Biologie zu treiben? Ich weiß, daß es viele höchst interessante und wichtige Probleme in der Theoretischen Biologie gibt, insbesondere scheinen mir interessant und wichtig die Fragen zu sein, die mit der Axiomatisierung und der deduktiven Auffassung der ganzen Biologie oder ihrer einzelnen Fragmente zusammenhängen. Aber ich kann mir (zumindest in dem heutigen Zustand der Untersuchungen) kaum ein interessanteres Problem vorstellen, das speziell die Formalisierung der Biologie betrifft; alle Fragen, die bei den Formalisierungsversuchen entstehen, haben keinen spezifisch-biologischen, sondern einen allgemein-logischen Charakter.

Ich habe mich z.B. viel in meinem Leben mit der Mengenlehre und der Metamathematik befaßt, habe auch den Grundlagenfragen viel Zeit gewidmet, aber habe nie eine formalisierte Mengenlehre oder formalisierte Metamathematik getrieben.⁴⁸

Den Artikel von Quine aus dem letzten Heft des Journ. Symb. Log.⁴⁹ kenne ich nicht (ebenso übrigens wie seinen Artikel aus Bd. 2, Heft 4⁵⁰); es ist kaum zu hoffen, daß ich diesen Artikel in absehbarer Zeit lesen werde.

⁴⁷ This question will often be posed to Woodger. For instance, in 1952, Abraham Robinson made the following comment after listening to Woodger's talk on "Problems arising from the application of mathematical logic to biology": "The formalization of this subject and of related subjects in Biology, which has been carried out by Prof. Woodger is certainly interesting in itself. At the same time I should like to know whether Prof. Woodger uses Symbolic Logic in his applied research for the sake of greater rigour or because this actually helps him solve certain problems?" See [59, page 140].

⁴⁸ This distinction between the axiomatization through formal logic and the development of a discipline in a formalized way seems an important one to keep in mind. Tarski worked much more like a mathematician in contrast to the kind of formalization pursued by Leśniewski.

⁴⁹ This refers to [31].

⁵⁰ This refers to [30].

Ich freue mich, daß Du mein MS. zu Scholz geschickt hast.⁵¹ Von Neurath habe ich bis jetzt keinen Brief bekommen.⁵²

Ich überlege es mir, ob es nicht zweckmäßig wäre, daß ich alle meine Bücher, die ich in Epsom und in Haag habe (und von denen Du in Deinen zwei letzten Briefen berichtest) nach U.S.A. sende.⁵³ Was denkst Du darüber? Wenn Du über eine passende Gelegenheit hören wirst, schreibe mir bitte; Schade, daß ich die Reise Hempels⁵⁴ nicht dazu verwendet habe.

Ich werde mich offenbar freuen, wenn ich, Deiner Initiative zufolge, von Oxford University Press einen Vorschlag bekomme, mein Buch⁵⁵ englisch herauszugeben. Aber ich wünschte, daß Das lediglich auf Grund Deiner Initiative geschehe, daß Du mit dem "Manager" nur in Deinem Namen (und nicht im Einverständnis mit mir) sprechen wolltest. Dazu zwei Bemerkungen:

⁵¹ See previous letter. This was a typescript of [38].

⁵² This refers to the letter of invitation for participating at the fifth International Congress of the Unity of Science in Harvard in September 1939. But it also refers to a confirmation for a financial operation that Neurath was charged to carry out on Tarski's behalf. See next note.

⁵³ This part of the letter is written in Aesopian language. Tarski is not talking about books but money. This becomes clear from a letter from Woodger to Neurath dated January 10, 1939, from where it emerges that Tarski had a bank account abroad but was worried about the Polish authorities finding out. Woodger, who had just visited Tarski in Warsaw, writes in a letter preserved in the Neurath Papers [2]:

I also have a request from Tarski. Will you please take the enclosed paper to Tarski's bank and draw out the amount of money stated. From this Tarski would like you to pay Grelling a sum of money which Tarski owes him. I gather from what Tarski said that you will understand what he means from conversation with him when he was in Holland. He also would like you to let him know when you have done this, but not to write too clearly because he does not want to run any risk of his having money in Holland being officially known.

From the correspondence between Tarski and Neurath, also found in the Neurath Papers, one can gather that the financial arrangement was made during Tarski's visit to Holland in late 1938. (Also in that correspondence one reads quite a bit about the sending of books that were left back at the hotel, the forwarding of books to Ms. Lutman etc.) Given the turn of events, Tarski was obviously planning to have his money brought to him in the United States by Woodger. More on this in the next letters.

⁵⁴ Carl Hempel (1905-1997) had been living in the USA since 1937.

⁵⁵ This is the book *Introduction to Logic and to the Methodology of the Deductive Sciences* [40].

1°. Aus einem neuen Brief von Carnap⁵⁶ erfahre ich, daß er mein Buch dem Amerikanischen Zweig der Oxford University Press empfohlen hat.
 2°. Auch die Firma Allen & Unwin würde bereit sein, einen Anteil in der Herausgabe meines Buches zu nehmen, sie wollen aber, daß ich Ihnen einen amerikanischen Teilhaber suche (und ich habe freilich keine Möglichkeit und keine Zeit mich damit zu befassen). Die Bemerkung 2° ist einstweilen nur für Dich.

Wirst Du es als eine große Frechheit betrachten, wenn ich mich nochmals (aber schon zum letzten Mal auf eine lange Zeit!) mit der Bitte an Dich wende, ein MS. (kürzer als die früheren) ins Englische zu übersetzen? Es handelt sich um ein wichtiges logisches Resultat, daß ich seit 1930 (!) nicht imstande war zu veröffentlichen⁵⁷; und jetzt ist schon klar, daß wenn ich es nicht in nächster Zeit veröffentliche, so geht es für mich verloren. Der deutsche Text ist schon seit langem fertig. Wenn Du aber keine Zeit hast, schreibe mir aufrichtig; ich werde es deutsch publizieren oder zu Hempels senden.

Ich habe vor paar Tagen einen Brief von Carnap bekommen. Viel gute Wünsche, Ratschläge und Vorschläge; aber für mich ist das eine deutlich: ich kann auf C. absolut nicht rechnen. Offen gesagt, habe ich etwas darauf gerechnet, daß er sich bemühen wird, um mir die Teilnahme in dem Herbstkongress in Harvard⁵⁸ auf diesem oder anderen Wege zu ermöglichen. (Hempel und Neurath haben paarmals darüber erwähnt). Jetzt schreibt er mir, er sei gerne bereit, mir eine offizielle Einladung zu diesem Kongress zu schicken, damit ich ein Reisestipendium von der Warschauer Universität bekommen könne. Das klingelt in der jetzigen Situation als ein böser Witz! Auch fragt er mich ob Du für mich bei "Society for the Protection. . ." nichts erreichen könntest und ratet mir bei dieser Society einen Antrag zu stellen, damit sie mir (ebenso wie früher dem Helmer⁵⁹) einen längeren Aufenthalt in U.S.A. ermöglicht; er, C., wird dann befürworten. Wie werde ich glücklich sein, wenn ich nicht mehr solche Briefe bekommen werde!

⁵⁶ Rudolf Carnap (1891-1970) was teaching at the University of Chicago.

⁵⁷ This was the completeness (and decidability) of elementary algebra and geometry.

⁵⁸ This is the fifth International Congress for the Unity of Science that took place in September 1939 in Harvard.

⁵⁹ This refers to Olaf Helmer (1910-2011), who will translate Tarski's logic textbook into English [40].

Bei mir nichts neues. Meine Reise nach Kopenhagen muß ich bis zum Herbst verschieben—ich könnte sonst keine Zeit finden, um mich zu den Vorträgen vorzubereiten. Schade—wer weiß, was im Herbst sein wird.

Herzliche Grüße

Dein Alfred

Letter 6. TARSKI TO WOODGER, MARCH 5, 1939.

Warschau, den 5.III.39

Lieber Sokrates!

Besten Dank für Deinen Brief sowie für den “New Statesman”, den ich bereits gelesen habe (ich werde Dir wirklich dankbar sein, wenn Du es mir regulär zusenden wirst).

Deine Frage betreffend die Sätze (*) ist leicht zu beantworten: diese Sätze (ich gebrauche Plural, da es sich ja um einige Sätze in verschiedenen Typen handelt) sind die einzigen Axiome, die sozusagen “R’y”⁶⁰ einführen und spielen deshalb eine analoge Rolle zu der früheren Definition (Aber die Analogie ist nicht so vollkommen wie im Falle anderer Begriffe, die früher definiert waren und jetzt undefiniert sind: denn (*) ist keine event. [*sic*] Definition, da es die Form einer Implikation hat; das kann freilich nur auf gewisse Deine Randbemerkungen Einfluß haben).

Im Zusammenhang mit “ \equiv ” hast du in Deinem vorletzten Brief gemeint, daß Du es jetzt vom Anfang an als undefinierten Begriff betrachten und axiomatisch characterisieren muß; ich habe Dir geantwortet, daß ich damit einverstanden bin.

Ich gehe nun zu der Frage meines Buches über. Ich möchte hier zwei Sachen abtrennen. (1) Ich würde mich freuen, wenn das Buch in kurzer Zeit englisch erscheinen könnte, da ich mich immer vorstelle, daß das vielleicht (?) mir etwas in Amerika erleichtern kann. Auf Allen & Unwin und auf Amerika ist nicht zu rechnen. (2) Nach meiner Meinung sollst du nicht selbst die Übersetzung unternehmen⁶¹; schade Deiner Zeit! Ich rate es Dir als ein Freund aufrichtig ab! Ich gestehe, daß Du es viel besser machen würdest als viele —

⁶⁰ See footnote 46.

⁶¹ Woodger’s eagerness at embarking on such translation work is astonishing. He probably enjoyed translating. Before his translation of *Logic, Semantics, Metamathematics* [47], he translated L. von Bertalanffy, *Modern Theories of Development* (Oxford, 1933), and Felix Mainx, *Foundations of Biology* (International Encyclopedia of Unified Science, Volume I, Number 9, Chicago, 1955). We also know that he translated Popper’s *Logik der Forschung* under the title “Hypothesis and Confirmation”. The translation is in [3] at Hoover Library and Archive, Stanford. However, Woodger’s translation was not the one used for the English translation of *Logik der Forschung*. Tarski’s *Introduction to Logic and to the Methodology of the Deductive Sciences* [40] was translated by Olaf Helmer.

viele (vielleicht alle) andere Leute, die in Betracht kommen. Aber es stehen doch auch viele andere Möglichkeiten vor. Ich habe z.B. von einem Mathematiker, Dr. John Todd⁶², London, Kings College, gehört, der sich sozusagen in der Übersetzung ins Englische mathematischer Bücher in den letzten Zeiten spezialisiert; er arbeitet für die Monographies Mathématiques in Warschau, übersetzt die Bücher von Saks⁶³ und Sierpinski⁶⁴ (Auch seine Frau⁶⁵ ist eine Mathematikerin, Deutschin aus Wien, eine Schülerin von Menger⁶⁶, für die die Grundlagenfragen nicht fremd sind).

Praktische Schlüsse sind folgende. Ich werde mich freuen, wenn Du mein Buch möglichst warm der Oxford University Press empfiehlst und verursachst, daß sich der Verlag an mich um Copyright wendet. Ich nehme aber an, daß dadurch die Frage des Übersetzers und insbesondere Deiner Teilnahme an der Übersetzung nicht vorgegriffen wird. Wenn die Oxford University Press mich tatsächlich um Copyright ersuchen wird, so werden die Verhandlungen mehrere Wochen dauern und du wirst Zeit haben, um Dir das alles zu überlegen; wenn nicht, so wird die Situation klar sein, ich werde nicht mehr darauf rechnen.

Das MS. meiner Arbeit wirst du in 7-10 Tagen bekommen. Ich habe im Zusammenhang damit nicht ganz gutes Gewissen, da Du ja so beschäftigt bist.

Ich sende Dir zugleich die Aufnahmen aus Bielany⁶⁷. Hast Du die Aufnahmen von dieser Frau bekommen, mit der Du in "glass-houses"⁶⁸ getanzt hat?

Was ist mit den Aufnahmen von Linke⁶⁹ los? Er hat noch neue gute Aufnahmen von seinen anderen Werken, aber wir wissen nicht, ob es Sinn hat, Dir diese Aufnahmen zu senden.

⁶² John Todd (1911-2007).

⁶³ Stanisław Saks (1897-1942).

⁶⁴ Waclaw Sierpiński (1882-1969).

⁶⁵ Olga Taussky-Todd (1906-1995).

⁶⁶ Karl Menger (1902-1985).

⁶⁷ This is a district of Warsaw that at the time was a part of Żoliborz. Tarski lived there.

⁶⁸ The Glass House (Szklany Dom) was the most modern and luxurious multi-apartment house in pre-war Żoliborz in Warsaw. For more information (in Polish), see https://pl.wikipedia.org/wiki/Szklany_Dom_w_Warszawie, last accessed on July 16, 2021.

⁶⁹ Bronisław Linke (1906-1962) was a painter.

Herzliche GrüÙe für Dich und Deine Familie

Dein
Alfred

Letter 7. TARSKI TO WOODGER, MAY 12, 1939.

Warszawa, den 12.V.39

Mein lieber Sokrates!

Erst heute bin ich imstande Dir mein Manuskript zu übersenden.⁷⁰ Lange dauerte es! In manchen Momenten war ich schon verzweifelt: ich dachte, daß es mir nicht gelingen wird, die Arbeit zu Ende zu bringen (jedenfalls nicht vor dem “Ausbruch des Weltkriegs”). Doch ist es gelungen.

Ich weiß nicht, wie Du jetzt mit Deiner Zeit stehst. Aus vielen Gründen würde ich mich freuen, wenn Du schnell die Arbeit übersetzen könntest, wenn Sie schnell im Druck erscheinen könnte. Im Zusammenhang mit gewissen Umständen, von denen ich noch weiter unten schreiben werde, kann das vielleicht einen großen Einfluß auf mein Schicksal üben.

Ich fürchte mich aber, daß diese Übersetzung für Dich sehr umständlich sein kann. Erstens—Du bist sehr beschäftigt und die Arbeit ist ziemlich groß (ungefähr 40 Druckseiten). Zweitens—in der Arbeit kommen manche technische, mathematische Termini. Es wäre sicher gut, wenn Du einen Mathematiker (Algebraiker) finden und mit ihm die terminologische Fragen besprechen könntest (event. auch die Frage, die ich im Punkte 17 dem MS. beigefügten “Bemerkungen der Übersetzung” berühre). Vielleicht könnte Dir Fr. Lutman⁷¹ in irgend welcher Weise bei der Übersetzung behilflich sein; ich werde mich jedenfalls an sie mit der diesbetreffenden Bitte wenden.

Wieviel Exemplare kannst Du zugleich auf deiner Schreibmaschine prägen, ohne Dir dabei die Arbeit schwerer zu machen? Die politische Sachlage ist so unsicher, daß ich mich freuen werde, wenn mindestens ein Exemplar bei Dir bleiben wird (Du wirst es event., im Falle des Krieges, nach Amerika zu Church⁷² senden), und wenn ich von Dir noch mindestens 2 Exemplare bekomme. Wenn es aber nicht geht oder Dir die Arbeit erschweren soll, sende mir freilich nur ein Exemplar—ich werde mir schon Abschriften machen lassen.

⁷⁰ This is the German typescript of “The completeness of elementary algebra and geometry”.

⁷¹ Maria Kokoszyńska-Lutmanowa (1905-1981) was in Cambridge, at Newnham College, during this period.

⁷² Alonzo Church taught at Princeton. Also see Footnote 34.

Die Arbeit soll zugleich in zwei Fassungen erschienen [sic]—in einer kürzeren in *Fundamenta Mathematicæ*⁷³ und in einer längeren als selbständige Brochure bei Hermann in Paris⁷⁴; so plane ich wenigstens. Das, was Du übersetzen wirst, ist die längere Fassung. Die kürzere werde ich automatisch in der Weise bekommen, daß ich mehrere Abschnitte und einzelne Sätze weglassen werde. überdies müssen einige änderungen durchgeführt werden; ich beschreibe sie auf den Seiten 1-7, die ich dem MS. beilege. Ich werde Dir dankbar sein, wenn Du noch extra diese Stellen und Sätze, die geändert werden sollen, übersetzen wirst (und mir auf besonderen Zetteln zugleich mit ganzem MS. sendest).

Du muß darüber denken, daß mein deutscher Stil sicher nicht tadellos ist. Beim Redigieren der Arbeit habe ich unwillkürlich darüber gedacht, daß doch der deutsche Text nicht derjenige ist, in dem die Arbeit veröffentlicht werden soll. Manchmal habe ich paar Varianten des Textes angegeben, damit Du wählen kannst (die Varianten finden sich über Text, sind mit Bleistift umgerissen und mit Fragezeichen versehen).

Schreibe mir, bitte, möglichst schnell, ob Du Zeit in der nächsten Zukunft findest kann [sic], um die Arbeit zu übersetzen, und wie lange kann es eventuell dauern. Unabhängig davon, wie Deine Antwort lauten wird, danke ich Dir von vorne herein herzlich.

Nun zu anderen Sachen. Vor allem möchte ich Dir eine Nachricht mitteilen—seit langem erste günstige Nachricht, die mich betrifft. Du hast vielleicht gehört, daß im September 1940 in Harvard University in U.S.A. ein großer Internationaler Mathematischer Kongress stattfinden wird.⁷⁵ Ich habe nun von dem Organisationskomitee eine Einladung bekommen, einen Vortrag auf der Plenarsitzung des Kongresses zu halten. Wenn Du Dir klar machst und gedenkst, daß ich—so viel ich weiß—nur der einzige in Polen eine solche Einladung bekommen habe (obwohl es doch hier so viele sehr gute Mathematiker und Logiker gibt, die unvergleichbar bessere Arbeitsbedingungen haben), daß ich keine offizielle Person bin—ein Gymnasiallehrer, daß ich schon seit Jahren

⁷³ This shorter version was never published.

⁷⁴ The proofs of that edition were published as [49].

⁷⁵ The International Congress of Mathematicians scheduled for 1940 did not take place on account of the war. The planned congress took place at Harvard from August 30 to September 6, 1950.

von meinen Fachgenossen in Polen mißhandelt werde, daß andererseits auf dem Kongress nur 15-18 Vorträge auf den Plenarsitzungen gehalten werden sollen, darunter nur zwei, die der Logik gewidmet werden (Gödels⁷⁶ und der meinige), so wirst Du sicher gestehen, daß ich das Recht habe, diese Einladung als eine große morale Genugtuung zu betrachten.

Ob es mehr als morale Bedeutung für mich haben wird, ist schwer vorzusagen. Am wahrscheinlichsten scheint es mir, daß noch viel früher der Krieg ausbrechen wird und daß meine Reise nach U.S.A. und der Kongress selbst nicht zustande kommen werden.

In anderen Bedingungen würde vermutlich diese Einladung einen entscheidenden Einfluß auf mein Schicksal üben—besonders wenn ich noch in dem kommenden Schuljahr (1939/40) bessere Lebens- und Arbeitsbedingungen hätte und mich in jeder Hinsicht zum Vortrag vorbereiten könnte. Von dem Organisationskomitee bekomme ich eine Unterstützung—150 Dollars—die teilweise die Reisekosten decken soll; auch werden die Kosten meines Aufenthalts in Cambridge (Harvard) von Komitee gedeckt. Es steht noch, wie mir der “chairman” des Komitees schreibt—eine Möglichkeit vor: die nämlich, daß ich anstatt der Unterstützung eine Einladung zu paar Vortragen seitens irgend einer Universität bekomme, was mir mehr bringen soll.

Die Einladung vom Komitee ist erst vor paar Tagen gekommen. Aber bereits vor 3 Wochen habe ich einen netten Brief und so komisch verfassten—in typischen “vorsichtigen” amerikanischen Stil) von Quine⁷⁷ erhalten. Er fragte mich, ob ich schon weiß, daß ich soll “be invitend [sic] to occupy a highly honored place on the program of the International Congress of Mathematics, here Harvard in 1940.” Er schreibt, daß er sich sehr deshalb freut, mich wiedersehen zu können. Er fragt mich, ob ich auch nicht über die Möglichkeit denke auf den Kongress der Einheitswissenschaft im September 1939 nach Harvard zu kommen. Und ferner schreibt er:

“It would of course be of great advantage, in this event, if a temporary posi-

⁷⁶ Kurt Gödel (1906-1978) spoke at the ICM on August 31, 1950, on the topic “Rotating universes in general relativity theory”. Tarski gave a joint contributed talk with W. Szmielew on September 1 on the topic of “Mutual interpretability of some essentially undecidable theories”, and on September 4 he delivered a 30-minute lecture on “Some notions and methods on the borderline of algebra and metamathematics”.

⁷⁷ W. O. Quine (1908-2000).

tion could be found in the United States to tide you over for the intervening year. It is impossible to estimate the likelihood of this, or of a position subsequent to the 1940 Congress, but I want to urge upon you the importance of immediately acquiring facility in the English language, in case you have not already done so and in case the possibilities which I have suggested sound attractive.

If indications should prove even half-way encouraging, please do not be restrained from coming by excess of caution; for I can assure you that you have no lack of hospitable admirers in this region.”

Ich habe ihm noch nicht geantwortet. Ich konnte wirklich keine Zeit dafür finden (ich wollte dabei englisch schreiben und Herr M.⁷⁸, der mir immer englische Briefe verfaßt, war nicht in Warschau—kommt vielleicht noch heute oder morgen zurück). Aber wichtiger ist noch, daß ich nicht wußte und bisher nicht weiß, was ich eigentlich antworten soll (vielleicht übrigens wartet er nicht auf die Antwort—der Brief enthält ja keine Frage). Du verstehst, wie schwierig meine Situation ist: wenn ich auch eine “temporary position” bekomme, so muß ich sie annehmen und kommen; und doch ist es höchst peinlich, die Familie in solcher politischen Sachlage zu verlassen.

Falls ich wirklich im Jahre 1939/40 irgend wo in U.S.A. vortragen sollte, so würde ich mich für jeden Preis bemühen, noch im Sommer auf eine Zeit nach England zu kommen mit einem Hauptziel: die englische Sprache zu beherrschen. Aber das alles ist jetzt so schwierig! Ich denke es mir z.B., daß ich jetzt kaum einen Paß bekomme ohne eine ernste offizielle Einladung seitens einer fremden wissenschaftlichen Institution.

Ich danke Dir herzlich für Deinen letzten Brief. Ich weiß, daß Du viel von mir denkst und viel um mich kümmerst, wenn auch deine Bemühungen bisher keinen Erfolg hatten. Jedenfalls ist es gut, daß Du die Frage meines vermutlichen “job”s in England und der Veröffentlichung meines Buches zur Klärung gebracht hast.

Es ist mir sehr daran gelegen, daß nicht viele Leute über den Quine’s Brief wissen. Sag’, bitte, niemandem darüber (mit Ausnahme von Eden und event. Frau Lutman).

⁷⁸ From a subsequent letter the name of the person can be seen to be “Medres”.

Du hast sicher den Brief von M.⁷⁹ bekommen. Hast Du irgend welche Nachricht über meine holländische Bücher?⁸⁰ Ich bin etwas unruhig deswegen.

Herzliche Grüße für Dich, Deine Frau und Kinder

Dein
Alfred

⁷⁹ Unclear whom is being referred to here.

⁸⁰ Tarski is speaking about money. See footnote 53.

Letter 8. TARSKI TO WOODGER, MAY 22, 1939.

Warschau, den 22.V.39

Mein lieber Sokrates!

Nach dem Erhalten Deines letzten Briefes habe ich viel über Deine Ratschläge und über Quine's Brief gedacht. Aus Deinem Briefe ersehe ich, daß Du Quine's Worte ganz anders interpretierst als ich es vorher getan habe. Meine Deutung war die folgende: ich soll damit rechnen, daß ich in naher Zukunft einen Vorschlag bekomme, nach Amerika auf das Schuljahr 1939/40 zu kommen und dort eine "temporary position" einzunehmen; die Zwischenzeit soll ich dafür ausnützen, um meine Kenntnis der englischen Sprache zu vervollkommen. Du deutest Quine's Brief anders: ich soll jedenfalls nach U.S.A. zum Kongress "for the Unity of Science" gehen, mit dem Entschluss, dort das kommende Schuljahr zu verbringen; möglicherweise bekomme ich dort einen "temporary job;" falls nicht, so kann ich doch immer auf die Gastfreundlichkeit meiner "hospitable admirers in this country" rechnen und bei ihnen (bei Quine u.a.) wohnen. Ich habe nun den betreffenden Brief zum zweiten Mal gelesen; es scheint mir leider daß Du Recht hast. Ich schreibe "leider," da ja Quine's Brief in dieser Deutung keinen praktischen Wert für mich hat. Es scheint mir, daß das eine strafwürdige Leichtsinnigkeit wäre, wenn ich mich entschließen würde, Quine's "suggestions" und Deinen Ratschlägen zu folgen. Du berücksichtigst einen Umstand nicht. Ich habe nämlich zwei Eltern, eine Frau und zwei Kinder. Und das sind alles Leute, und keine Marmeladentiere, keine Bären u.s.w.: sie vermögen nicht, auf paar Monate in einen Schlaf zu versinken. Wenn ich mich entschließe, nach Amerika zu gehen und dort das kommende Schuljahr zu verbringen (unabhängig davon ob ich einen "job" dort bekomme), so muß ich schon jetzt in der Schule kundmachen, daß ich meine Stunden auf das nächste Jahr abgebe; demzufolge fällt bereits am 1. August ein Drittel meines Einkommens weg (d.h. das Geld, das ich in der Schule bekomme). Das analoge muß ich in der Universität kundtun—ich muß sagen, daß ich im kommenden Jahr keine Vorträge zu halten beabsichtige; infolgedessen fällt am 1. September das zweite Drittel meines Einkommens weg. Das letzte Drittel (d.h. das Geld, das ich in der Universität für meine Adjunktur bekomme) fällt am 1. Oktober weg, falls ich zu dieser Zeit meine Pflicht nicht übernehme. Meine Ersparnisse reichen für den Pass, die Visa, die Reise nach Amerika und zurück und noch für einen einmonatigen Aufenthalt in Amerika. Wovon wird also meine Familie bereits

im September leben? Meine Frau verdient zwar ungefähr 6.50£ monatlich, das ist aber für eine Person etwas zu wenig, nicht nur für fünf.—Ich könnte event. das eine machen: nach U.S.A. zum Kongress für “Unity of science” gehen, mit dem festen Entschluß, sofort nach dem Kongress nach Polen zurückzukehren, falls ich keinen—genügend hoch bezahlten—“job” bekomme. Das wäre aber ein großes Risiko—ich würde meine ganze Ersparnisse herausgeben und würde große finanzielle Schwierigkeiten haben bei dem Versuch, eine analoge Reise in 1940 zu wiederholen (und der Intern. Math. Kongress ist für mich unvergleichbar wichtiger und interessanter als der Kongress für die Einheitswissenschaft).

Deine Worte “I must say I envy you” verstehe ich nicht. Du bekommst ja schon zum zweiten Mal in einer kurzen Zeit eine ganz reelle Möglichkeit nach U.S.A. zu gehen; man gibt Dir Geld dafür—das ist das wichtigste. Ich erhalte statt dessen vage Versprechungen und Versicherungen über “no lack of admirable admirers in this country.” Glaube mir, ich würde mich viel mehr freuen, wenn ich anstatt des Quine’s Briefes eine solche Einladung wie Du oder wie seinerzeit Carnap bekommen hätte (für Carnap hat ja auch Quine diese Einladung verschaffen).*

Einem Deiner Ratschläge habe ich jedenfalls gefolgt: ich habe sofort zu Quine geschrieben. Ich lege die Abschrift dieses Briefes bei.

Nach dem, was ich oben geschrieben habe, wirst Du mich vermutlich mehr dazu bereden, daß ich mit Dir Ende Juli nach U.S.A. gehe. Für Deine Einladung nach Tanhurst danke ich Dir herzlich. Ich gestehe offen, daß ich mich sehr freuen würde, wenn ich könnte auf paar Wochen nach England kommen. Leider ist das so teuer! Der Pass und die Visa würden mich fast ebenso viel kosten wie die Fahrkosten nach London und zurück! Und es ist fraglich ob ich überhaupt einen Pass bekomme. Ich muß noch erfahren, ob nicht die Reise mit einem Schiff billiger ist (der Pass kostet jedenfalls etwas billiger, wenn ich mit einem polnischen Schiff fahre). Es scheint mir, daß das nicht vernünftig wäre, in meinen Bedingungen so viel Geld für diese Reise herauszugeben.

*) Sogar die Annahme der Einladung für den Kongress in 1940 ist für mich eine leichte Aufgabe. Denke’s Dir: Du bekommst 200 Dollars, und das ist sicher nicht zu viel. Ich bekomme 150, obwohl mich die Reise, der Pass, die Visa viel mehr kosten.

Dabei fürchte ich mich, daß Du in dieser Zeit sehr beschäftigt sein wirst und daß ich Dir nur stören würde.⁸¹

In dem, was ich bisher geschrieben habe, habe ich von der Eventualität des Kriegsausbruchs abgesehen. Vor einem Jahr und vor zwei Jahren waren alle in England und überhaupt im Westen überzeugt, daß der Krieg in nahe Zukunft ausbrechen wird; in Polen waren alle ruhig. Es hat sich herausgestellt, daß die Polen Recht hatten. Ich fürchte mich, daß auch jetzt die Polen Recht haben. Hier herrscht jedenfalls die Meinung vor, daß der Kriegsausbruch in naher Zukunft unvermeidbar ist. Wir fürchteten uns bereits gestern, daß das entscheidende Moment gekommen ist (über neue Aufreizungen in Dantzig hast Du sicher gelesen).⁸²

Ich bin Dir aufrichtig dafür dankbar, daß Du—trotzt [sic] aller Deiner Beschäftigungen—noch Zeit für die übersetzung meiner Arbeit findest. Ich freue mich sehr, daß die übersetzung so schnell fertig sein wird. Ich möchte Dich bitten, in meinem Manuskript den Text der Anmerkungen 9) und 10) etwas zu ändern; ich lege den neuen Text auf der nächsten Seite bei.

Besten Dank für den “New Statesman.” Wie viel englische Bücher hast Du aus Holland bekommen?⁸³

Mit herzlichen Grüßen

Dein Alfred

P.S. Falls Deine Knaben das zugeklebte Briefzeichen für 30 Gr. bereits haben, sende es, bitte, zurück!

⁸¹ Tarski did not go to Tanhurst (Epsom Downs) on this occasion.

⁸² Poland was invaded by the Germans on September 1, 1939.

⁸³ Again, a disguised reference to money. See footnote 53.

Letter 9. TARSKI TO WOODGER, JUNE 28, 1939.

Warschau, den 28.VI.39

Mein lieber Sokrates!

Du hast sicher meine Karte bekommen, die ich vor paar Tagen geschrieben habe. Nimm es mir nicht übel, daß ich erst so spät den Empfang der Manuskripte bestätigt⁸⁴ und meiner großen und aufrichtigen Dankbarkeit den Ausdruck gegeben habe. Ich war in den letzten Wochen so überarbeitet und bin schrecklich müde!

Ich weiß, daß Du jetzt sehr beschäftigt bin [sic], und trotzdem muß ich noch einmal Deine Güte ausnützen und Dich mit derselben übersetzung in Anspruch nehmen. Ich sende Dir die beiden Exemplare Deiner übersetzung zurück. Ich habe Deine übersetzung sorgfältig gelesen, Deine "Comments" durchgedacht, mit den Fachkollegen (insbesondere Saks) gewisse terminologische Fragen gesprochen, hie und da—mit Hilfe von Medres—kleinere änderungen eingeführt und alle zwei feh]haften Stellen gemerkt. Alle diese Stellen habe ich auf besonderen Bogen besprochen, die den MS-en beiliegen ("Bemerkungen zu der Übersetzung"); dort richte ich auch Deine Aufmerksamkeit auf gewisse änderungen, die ich eingeführt habe und die mir nicht ganz sicher zu sein scheinen; ich gebe die Nummer der Seite und die Zeilen und versee das alles mit "?"

Meine Bitte besteht nur im folgenden. Lese, bitte, die ganze übersetzung durch—mit meinen "Bemerkungen z. d. Übersetzung" in der Hand—und fasse den endgültigen Entschluss betreffend alle eingeführten Änderungen und alle fraglichen Stellen. Meine Änderungen sollst Du als Vorschläge betrachten; der endgültige Entschluss gehört zu Dir. Das korrigierte MS. soll direkt von Dir zu dem Verleger gehen; ich werde erste die Korrekturbogen sehen. Wegen der Absendung des MS. zu dem Verleger werde ich Dir in naher Zukunft noch extra schreiben; das betreffende Exemplar soll mit meinen "Indications pour l'imprimerie" versehen werden. Das zweite Exemplar behalte, bitte, bei Dir (Epsom Downs ist eine sicherere Stelle als Żoliborz); wenn das Dich nicht belasten würde, so würde ich Dich event. bitten, dieses Exemplar nach U.S.A. mitzunehmen und dort etwa bei Quine oder Carnap zu lassen.

⁸⁴ This was the completed translation into English of *The Completeness of Elementary Algebra and Geometry*.

Ich möchte die in Rede stehende Arbeit meiner Frau widmen. Ich will es aber in einer ganz einfachen Form machen, ohne entbehrlichen Pathos. Ich habe auf dem MS nach dem Titel die Worte “TO MY WIFE” geschrieben, mit der Bitte, diese Worte auf einer besonderen Seite zu drucken.⁸⁵ Wenn Du etwas dagegen hast (mit Rücksicht auf die Gewohnheiten des englischen Lesers) oder einen anderen Text vorschlagen möchtest, schreibe mir, bitte, möglichst schnell.

Noch eine wichtige Sache in diesem Zusammenhang, von der ich fast vergessen habe. Ich möchte eine etwas größere Änderung einführen, und zwar den Text der Anmerkungen 21-28 (pp. 50-53 des MS.) ändern. Ich habe den neuen Text teilweise deutsch, teilweise englisch geschrieben und den MS beigelegt (“Neuer Text der Anmerkungen 21-28”). Du wirst sehen, daß der bisherige Text im vorwiegenden unverändert bleibt, daß die Änderung größtenteils im Umstellen einzelner Abschnitte besteht. Nichtsdestoweniger wirst Du etwas Zeit dafür verlieren, um die Seiten in Ordnung zu bringen; das tut mir wirklich sehr leid!

Mit dem deutschen Text ist nicht so schlecht wie Du in deinem letzten Brief schreibst. Ich habe alle fraglichen Stellen einem deutschen Mathematiker gezeigt; er hat nur eine dieser Stellen vom stilistischen Standpunkt in Frage gestellt! Außerdem in zwei Fällen habe ich wegen der Eile und meiner üblichen Zerstreutheit einzelne Worte weggelassen—es ist also klar, daß Du diese Stellen nicht verstehen konntest. Mit “und zwar,” “nämlich” u.s.w. kommen sicher Schwierigkeiten vor—daran ist aber der Verfasser nicht schuldig. Was “u.a.” betrifft, so hab’ ich Dir ja geschrieben, daß durch diese Buchstaben manchmal “unter anderem,” manchmal aber “und andere” ersetzt wird; Du hast es nicht bemerkt und sogar “u.ä.” (= “und ähnliche”) als “unter anderem” gedeutet. Das sind aber Kleinigkeiten. Soviel ich beurteilen kann, ist Deine Übersetzung recht gut, sorgfältig und eindringlich; ich bin Dir wirklich sehr dankbar!

In meinen persönlichen Angelegenheiten nichts neues. Trotz deiner Erwartungen (und in übereinstimmung mit den meinigen) hat Quine auf meinen letzten Brief gar nicht geantwortet. Dagegen habe ich vor drei Tagen einen kurzen Brief von Lewis bekommen. Er ladet mich ein—im Falle wenn ich im

⁸⁵ The proofs of the publication were published in [49]. They contain the dedication “To my wife”.

September oder Oktober in U.S.A. weilen werde—“to address” in Philosophical Seminar of Harvard University auf irgend ein Thema aus dem Bereich der Mathematik oder math. Logik; unterzeichnet: C. I. Lewis⁸⁶, acting chairman (bedeutet das ungefähr: Dekanus?)

Er schreibt nicht, ob ich dafür Geld bekommen werde oder nicht—und das ist ja für mich das wichtigste. Kuratowski⁸⁷, der vor 2 Jahren in U.S.A. paar Wochen weilte und von 12 Universitäten Einladungen hatte (u.a. von Harvard University) meint, daß dieser Brief nicht im amerikanischen Stil gehalten ist; in analogen Briefen, die er vor 2 Jahren bekam, waren immer die finanziellen Bedingungen deutlich bestimmt (im Harvard Un. hat er z.B. 75 Dollars für einen Vortrag bekommen—das ist schon etwas). Kuratowski sagt, er würde an meiner Stelle entweder offen zu Lewis in dieser Angelegenheit schreiben oder dem Brief überhaupt keine Bedeutung zu schreiben.

Und—im allgemeinen—fast alle sachkundigen (und von mir wohlwollenden) Leute, mit denen ich—direkt oder indirekt—über meine eventuelle Reise nach U.S.A. gesprochen habe, meinen, daß dies eine strafwürdige Leichtsinnigkeit meinerseits wäre. Trotzdem habe ich den endgültigen Entschluß noch nicht gefaßt: bis heute habe ich zu viel Arbeit gehabt, um darüber denken zu können. Ich habe vor, morgen die ganze Angelegenheit durchzudenken, alle “pro” und “contra” im Gedanken zu wiegen, auszurechnen, ob überhaupt eine finanzielle Möglichkeit meiner Reise besteht und den endgültigen Entschluß zu fassen. Im Falle des positiven Entschlusses werde ich mich um den Paß bemühen; soviel ich gehört habe, werde ich dabei auf große Schwierigkeiten stoßen; vielleicht könnte man sie doch überwinden. Ich möchte in diesem Fall entweder Ende Juli (23.VII) oder Anfang August (8.VIII) von Gdynia direkt nach U.S.A. fahren, und zwar dort, wo Du weilen wirst.⁸⁸ Ich würde gern mit Dir August verbringen, u.a. aus dem Grunde, daß ich dann viele Gelegenheit hätte, wissenschaftliche Gespräche englisch zu führen; ich würde mich vielleicht dann wagen können, einen Vortrag im September zu halten. Im Zusammenhang damit schreibe mir, bitte, genau, wo Du den August in U.S.A. verbringen will und wie man mit Dir treffen kann. Mit Dir zusammen nach U.S.A. zu fahren wäre es jedenfalls unmöglich—ich werde zu spät wissen, ob ich überhaupt fahren kann.

⁸⁶ Clarence Irving Lewis (1883-1964).

⁸⁷ Kazimierz Kuratowski (1906-1980).

⁸⁸ Tarski left from Gdynia to New York on August 11, 1939. See [9, page 124]

Das alles ist aber höchst zweifelhaft. Wahrscheinlicher scheint mir in diesem Moment, daß ich überhaupt auf die Reise verzichten werden. Du hast mir nicht geschrieben, wie viel englische, bzw. holländische Bücher Du aus Haag damals bekommen hast und wie groß meine Bibliothek jetzt ist. Das interessiert mich u.a. aus dem Grunde, daß ich aus einem Briefe Grellings⁸⁹ ersehe, daß Neurath—trotz meinen Bitten—dem Grelling sein Buch nicht zurückgegeben hat. Ich werde mich freuen, wenn Du meine Bücher nach U.S.A. nimmst und sie dort in einer sicheren und für mich zugänglichen Stelle bleiben läßt.⁹⁰

Besten Dank für *New Statesman* und für die Briefzeichen! Herzliche Grüße für Dich und Deine Familie.

Dein Alfred

⁸⁹ Kurt Grelling (1886-1942).

⁹⁰ Tarski is not talking about books but money. See footnote 53.

Letter 10. TARSKI TO WOODGER, JULY 7, 1939.

Warszawa, den 7.VII.39

Mein lieber Sokrates!

Hab' meinen herzlichsten Dank für die ganze Mühe, die Du in die Übersetzung meiner Arbeit gelegt hast. Ich hoffe, daß jetzt schon die Übersetzung tadellos ist.

Wenn "in the times" nicht gut englisch klingt, so muß freilich "during the period" bleiben. Deutsch würde es etwas lächerlich klingen [sic]. "Während der Periode, in der das Radio nicht bekannt war. . ." Es scheint mir, daß der Ausdruck "die Periode" in der Umgangssprache nur dann verwendet wird, wenn es sich um eine beiderseits beschränkte Zeitstrecke handelt. Hier kommt dagegen eine von unten unbeschränkte Strecke $< -\infty, a >$ in Betracht (wo "a" das Moment der Radioerfindung betrachtet). Dabei das rechte Ende dieser Strecke liegt sehr nahe von uns. Deshalb scheint mir der Ausdruck mit "Periode" in diesem Zusammenhang etwas lächerlich zu klingen. Vielleicht habe ich nicht recht.

Zur Frage: "first n derivatives" oder " n first derivatives"? Stelle Dir vor ein System von wohl geordneten Mengen; z.B. jede Menge besteht aus Schülern einer Klasse, die nach ihren Fortschritten geordnet werden. Wenn man nun sagt " n erste Glieder," so kann zweierlei gemeint werden: 1° aus jeder Menge wird das erste Glied gewählt und aus diesen Gliedern wird eine Menge gebildet; 2° aus einer bestimmten Menge werden 1^{tes}, 2^{tes}, . . . , n ^{tes} Glied ausgesondert. In meiner Arbeit wird die in Rede stehende Wendung im zweiten Sinne benützt.

Ich weiß noch nicht, wo meine Arbeit erscheinen wird. Der Pariser Verleger zögert mit dem Abschließen des Vertrags—vermutlich im Zusammenhang mit der allgemeinen Sachlage; ich werde jedenfalls nicht mehr zu ihm schreiben. Die Arbeit könnte hier erscheinen. Ich möchte aber lieber einen amerikanischen Verleger oder event. eine amer. Zeitschrift suchen. Schreibe mir, bitte, ob Du das MS. mit Dir nach USA nehmen kannst, und ebenfalls alle meine Bücher!

Ich danke Dir sehr, daß Du mich über den Charakter des Lewis'schen Briefes aufgeklärt hat [sic]. Schade, daß ich so spät darüber erfahren habe. Ich habe nämlich paar Tage nach der Lewis'schen Einladung eine analoge Ein-

ladung aus Chicago—von Morris⁹¹—bekommen. Der—im Grunde fiktive—Charakter dieser Einladungen war nicht für mich klar. Ich dachte, daß ich eventuell noch auf paar solche Einladungen rechnen kann, daß die Honoraren einen großen Teil meiner Reisekosten decken werden und habe mich entschlossen nach U.S.A. zu fahren. Ich habe schon viele Schritte in dieser Richtung gemacht und Geld herausgegeben. Jetzt versuche ich das alles wieder gutmachen. Vermutlich wird es nicht gelingen, und ich werde *nolens volens* nach U.S.A. fahren; das wird sich in den nächsten Tagen aufklären.

Es ist aber für mich unbegreiflich, wie Quine auf den Gedanken gekommen ist, eine Initiative zu solchen “fiktiven” Einladungen zu geben. Die Paßschwierigkeiten habe ich immer als nebensächliche Umstände betrachtet, so daß ich darüber in meinem Brief zu Quine gar nicht erwähnt habe. Die einzige wichtige Frage war die Geldfrage (und nur das wurde in meinem Brief hervorgehoben). Es ist also klar, daß ich irreführt werden mußte, als ich nach meinem Briefe zu Quine derartige Einladungen bekommen habe (Morris war aber so vorsichtig, daß er in dem begleitenden Brief betont hat, ich könne keinen großen materiellen Nutzen aus seiner Einladung ziehen, da Chicago sehr entfernt von Cambridge ist).

Dabei konnten mir solche Einladungen nichts helfen.⁹² Ich habe Dir schon geschrieben, wie mißtrauisch sich die Leute aus der Universität, z.B. Kuratowski, zu der Lewis’schen Einladung benommen haben. Das analoge hat sich im Ministerium und amer. Konsulat wiederholt, als ich mich bemühte, auf Grund der Einladung das Erhalten des Paßes zu erleichtern. Man hat mir mit ironischem Lächeln ungefähr so geantwortet: “Nein, mein Herr, das zeigen Sie uns besser nicht! Solche “Höflichkeitseinladungen” kennen wir sehr gut. Wenn die Amerikaner wirklich wünschten, Ihre Vorträge zu hören, so würden Sie in ihrer Einladung mit der Geldfrage beginnen.” Ich war also diesmal naiver als andere Leute.

Ich muß Dir offen gestehen, daß ich jetzt viel mehr pessimistisch eingestellt bin als früher; solche fiktive Einladungen oder solche unverantwortliche Worte wie die von Northrop⁹³ vor einem Jahre haben einen niederdrückenden Ein-

⁹¹ Charles Morris (1901-1979).

⁹² A similar situation had occurred in 1936 when Susan Stebbing had extended a half-baked invitation for Tarski to visit England. Tarski’s annoyed reaction is recorded in a long letter to Popper dated January 3, 1937.

⁹³ Filmer Stuart Cuckow Northrop (1893-1992). It is unclear what Tarski is referring

fluß. Vor paar Monaten haben zwei Polen Lehrkanzeln in U.S.A. bekommen: ein angewandter Mathematiker Splawa-Neyman⁹⁴ (mein Universitätskollege), der früher in London war, und ein Soziolog[e] aus Krakow, Herr Lange⁹⁵ (jetzt in Chicago). Beiden gelang es, wie es scheint, ganz leicht. Vor zwei Jahren hatte Kuratowski eine Reihe von gut bezahlten Einladungen zu einzelnen Vorträge bekommen, ohne daß er sich darum irgend wie bemühte; analog war es ja mit Carnap. In meinem Fall macht das alles unüberwindliche Schwierigkeiten; statt dessen bekomme ich “Höflichkeitseinladungen” und unverbindliche Briefe. Das alles nur privat für Dich!

Das dummste ist dabei, daß ich doch—sozusagen trotz meinem Willen—vermutlich nach U.S.A. gehen werde; vermutlich wird es mir schon nicht gelingen mein Geld zurückzubekommen. Und zwar geht das Schiff schon am 23.VII von Gdynie weg—ich werde also vermutlich in derselben Zeit wie Du nach U.S.A. kommen (vielleicht könnte es mir gelingen, die Reise bis 8.VIII abzulegen; würdest Du es als vernünftig betrachten?). Schreibe mir, bitte, wie ich mich nach meiner Ankunft benehmen soll. Wohin fahren: nach New York, nach Cambridge oder vielleicht dort wo Du sein wirst? Wie einen Hotel finden u.s.w.!

Traurig ist, daß meine Kenntnis der englischen Sprache gar nicht fortgeschritten ist. In letzten Monaten habe ich schrecklich viel gearbeitet, und konnte dem Englischen nur sehr wenig Zeit widmen. Jetzt ist es noch schlimmer. Durch die Reisenangelegenheiten (die bei uns sehr mühsam sind) bin ich gänzlich in Anspruch genommen. Dabei ist es sehr heiß, und ich bin so müde!

Eine große Bitte zu Dir (Du bist arm mit meinen ewigen Bitten; hoffentlich wird die Reise nach U.S.A. zumindest den Erfolg haben, daß ich nach meiner Rückkehr die englische Sprache besser beherrschen und nicht mehr gezwungen sein werde, Deine Güte mißzubrauchen). Ich muß paar kurze offizielle Briefe nach U.S.A. senden, ich möchte sie englisch redigieren, ich kenne aber niemanden, der jetzt in Warschau weilt und mir helfen könnte. Ich sende Dir den deutschen Text; sei so gut, sende mir die Übersetzungen zurück.

...

to here.

⁹⁴ Jerzy Neyman (1894-1981).

⁹⁵ Oskar Ryszard Lange (1904-1965).

I. Dear Professor Lewis!

Ich danke Ihnen für Ihren Brief vom und für die dort enthaltene Einladung, die ich als große Ehre betrachte. Falls es mir gelingt, die finanziellen Schwierigkeiten zu überwinden und nach Cambridge zu kommen, so werde ich sicher Ihre Einladung ausnützen.

Sincerely yours ...

II. Dear Professor Morris!

Besten Dank für Ihren freundlichen Brief vom und für die beigelegte Einladung. Vermutlich werde ich trotz große materielle Schwierigkeiten nach Cambridge in diesem Jahr kommen und im Kongress für die Einheitswissenschaft teilnehmen. Wir werden uns dann ja sicher zusammentreffen, und ich werde mir klar machen, ob es für mich eine Möglichkeit nach Chicago zu folgen.

Sincerely yours ...

III. Dear Missis [sic] Brodie!⁹⁶

Ich kann leider auf Ihren Brief vom 7.VI keine endgültige Antwort geben. Vermutlich werde ich im Kongress in Harvard University teilnehmen. Aber erst dort werde ich entschließen, wie ich lange in U.S.A. bleibe.

Sincerely yours

IV. Dear Professor Curry!⁹⁷

Ich danke Ihnen bestens für Ihren Brief vom 16. Juni.

Der Vortrag, den ich beabsichtige auf dem Kongress⁹⁸ zu halten, hängt mit dem Vollständigkeitsproblem eng zusammen, hat auch viele Berührungspunkte mit dem Löwenheimischen Satz und dem Begriff of constructiveness.

⁹⁶ Helen Charlotte Brodie.

⁹⁷ Haskell Curry (1900-1982) was chair of the logic section of the projected 1940 ICM and so this was in response to the official invitation to speak there.

⁹⁸ The reference is to the International Congress of Mathematicians planned for September 1940.

Mit Rücksicht auf den mathematischen Gehalt des Vortrags wäre es erwünscht, daß keine Kollision zwischen diesem Vortrag und der Konferenz der Analysis und insbesondere der Algebra bestehe. Ich würde mich sogar freuen, wenn dieser Vortrag sozusagen für zwei Konferenzen: der math. Logik und der Algebra bestimmt wäre. Ich erhebe aber keinen Einspruch dagegen, daß mein Vortrag am Anfang der zweiten Sitzung der logischen Konferenz statfinde.

Die Rolle der discussion leaders, von denen Sie schreiben, ist für mich nicht klar genug. Ich teile aber gänzlich Ihre Zweifel betreffend den Wert der “artificially stimulated discussion” (Curry schreibt: it seems to us doubtful whether such artificially stimulated discussion can really be profitable).

Erst vor paar Tagen ist “es mir gelungen, ein Exemplar meiner Arbeit “Über addit[iv]e und multiplikative Mengenkörper. . .”⁹⁹ aufzubringen und—Ihrem Wunsche gemäß—Ihnen zu senden.

Yours very sincerely

...

Sei nicht, mein lieber Sokrates, auf mich böse! Ich mache Dir wirklich in letzter Zeit sehr viele Umstände. Antworte mir schnell und schicke mir viele gute Ratschläge betreffend U.S.A.

Herzliche Grüße für Dich und die Deinigen

Alfred

⁹⁹ This refers to [37].

Letter 11. TARSKI TO WOODGER, JULY 20, 1939.

Kazimierz, 20.VII.39

Mein lieber Sokrates!

Besten Dank für alles: für den Brief vom 9. d. M. und für die Postkarte vom 15 d. M., für die Übersetzungen meiner Briefe zu den Amerikanern und für das zugesandte Buch. Deine Freundschaft empfinde ich immer als einen der wenigen Stützpunkte in meinem Leben.

Es ist also sehr wahrscheinlich, daß wir uns noch im August in Cambridge Mass. treffen. Da ich Deine Adresse nicht kennen werde, so werde ich mich freuen, wenn in Cambridge poste-restante eine Nachricht von Dir auf mich warten wird. Andererseits werde ich mich möglichst schnell mit Quine in Verbindung setzen und von ihm (falls er dann in Cambridge sein wird) etwas Näheres über Dich erfahren.

Ich habe nicht vor, vor meiner Abreise zu Quine zu schreiben, da ich bis zum letzten Moment nicht sicher sein werde, ob ich schließlich nach U.S.A. fahre. Ich werde Dir aber dankbar sein, wenn Du Quine über meine Absicht, nach Cambridge gegen 18.-20. August zu kommen, erzählen wirst.

Meine Einstellung ist ebenso pessimistisch wie früher. Es scheint mir, daß diese Reise ein der unvernünftigsten Schritte in meinem Leben sein wird. Mein Interesse für das diesjährige Kongress ist ziemlich beschränkt (auch die amerikanischen Logiker scheinen sich sehr wenig für dieses Kongress interessieren [sic]); ich habe keine Absicht, dort einen Vortrag zu halten, ich würde übrigens außerstande sein so etwas zur Zeit vorzubereiten. Ich kann kaum auf die Möglichkeit rechnen in U.S.A. Geld zu verdienen (schon wegen meiner Mangel in englischer Sprache, aber freilich auch aus anderen Gründen). Letzten Endes werde ich sehr viel Geld herausgeben und im Oktober nach Hause zurückkehren; und ich fürchte ernst daß ich dann schon absolut keine Möglichkeit finde, in 1940 [sic] nach Cambridge zu kommen (obwohl der Intern. Math. Kongress für mich sehr wichtig ist).

Das, was Du in diesem Zusammenhang schreibt, lautet keineswegs erfreulich; insbesondere die Worte, daß ich doch immer die Möglichkeit habe, mich an eine "agency" in New York zu wenden. Wenn ich diese Worte in dem Brief eines Amerikaners, etwa Quine's finden würde, so würde ich sicher auf die Reise verzichten (obwohl ich das Geld für die Schiff[s]karte verlieren

müßte): ich würde diesen Rat (mich an die "agency" zu wenden) als einen einleuchtenden Beweis dafür betrachten, daß ich auf nichts in U.S.A. rechnen kann.

Herzlichste Grüße für Dich und Deine Familie. Auch Maria läßt Dich herzlich grüßen

Dein
Alfred

Letter 12. TARSKI TO WOODGER, DECEMBER 27, 1939.

My address: [printed letterhead from The College of the City of New York]¹⁰⁰

December 27, 1939

Dear Socrates,

Don't be angry and excuse the delay in my answer. In these recent months I had to perform three difficult tasks: to find a job which would enable me to live in United States and to support my family in Poland, further to settle my status in this country and, finally, to get in touch with my family. The first problem is solved in a satisfactory, although only provision, manner. At November 15 I was appointed in the Harvard University for one year as a Research Associate and, moreover, I received an invitation to lecture in the City College of New York as a Visiting Professor in the Spring Semester (beginning in February 1940); I shall be able to combine these two jobs. In order to settle the second problem I am obliged to leave the United States and to go for a short time to Cuba (I am writing these words on a ship between Miami and Havana).¹⁰¹ I hope that in a few days I shall be able to return to United States as an American resident, with a permanent immigration visa.¹⁰² On the contrary, all my attempts to get in touch with my family have not yet given any result; I have not yet got any news either from Maria or from my parents and brother. You realize how I am worried on this account. The news which come here from the German part of Poland are simply horrifying; it is an inferno there. I re[a]d e.g. a letter from Mrs. Lindenbaum¹⁰³ to Wundheiler¹⁰⁴ in which she described her flight from Warsaw; she writes among other things that one of my first cousins (the sister of that young women [sic] with whom we climbed together in Tatra in summer 1936),

¹⁰⁰ From this point on, Tarski will write in English.

¹⁰¹ Tarski had to leave the United States and to apply for readmission to the U.S. Consul from Havana. In order to get a permanent visa he had to convince the State Department that he would be "an asset rather than a liability to the United States" [9, page 131]. He had letters from Marshall Stone, Rudolf Carnap, Willard van Orman Quine, Eric Temple Bell, Ernest Nagel, Haskell Curry, and Bertrand Russell (see [9, page 131])

¹⁰² The permanent visa was granted in Havana on December 29, 1939. See [9, page 131].

¹⁰³ Janina Hosiasson Lindenbaum (1899-1942).

¹⁰⁴ Aleksander Wundheiler (1902-1957) was in the USA during this period.

her husband and her two children were killed in the first days after the outbreak of the war. The Warsaw University is completely ruined, the University Library (1.000.000 volumes) is burned!

I don't know anything about Kokoszyńska¹⁰⁵; I wrote her, but have not got any answer. I think that her situation is also very bad. It would be important to know whether her fellowship in Cambridge in Newnham Colledge [sic] is still available. Could you perhaps get this information and inform Kokoszyńska (Lwów, Teatynska 17, West Ukrainien)?

I am anxious to hear about your work and your life in Bristol, about Eden and children. I hope that I shall be able to answer your next letter without delay.

This is the first letter which I write Englisch without any help. Probably you will find here many errors. Indeed, I shall be very grateful to you, if you point out in your next letter the most important of them.

With kindest regards

Yours cordially
Alfred

¹⁰⁵ Maria Kokoszyńska-Lutmanowa (1905-1981).

Letter 13. TARSKI TO WOODGER, FEBRUARY 17, 1940.

[Written by Woodger: received March 6]

February 17, 1940

My dear Socrates,

I have just got your letter of January 26. Your previous letter came here about 1st of January, and only two weeks ago I received your nice Chris[t]mas gift. I enjoyed very much the book you sent me, but still more the fact that you didn't forget me and were not disinclined to me by my silence. I'm so ashamed that I've delayed my answer until today. But you can easily imagine how busy I am now and how tired by these first months of my lecturing in English language! I have two courses in City College and I am conducting an advanced seminar¹⁰⁶ outside (the members of this seminar are mostly university and college teachers). Moreover, I've got a lot of invitations from various universities and from various departments in those universities (from Columbia, Princeton, Yale, New York University, Chicago, Michigan, Notre Dame, Harvard, Brown University etc.) to individual lectures; altogether about 16 invitations for the current term. I must adjust the subject-matter and the style of my lectures to different kinds of hearers: some invitations were addressed by mathematicians, some others by philosophers, and a number of them was sent me by the joined departments of philosophy and mathematics. And for practical reasons I can't refuse any invitation, since my position in City College is only temporary (probably Bertrand Russell will come here in the next year as visiting professor¹⁰⁷), and I must look for a permanent job.

Your realize that in this situation I'm unable to think even about my own work and my own problems; in particular I cannot continue my work on the completeness of algebra in which I am sincerely interested. Concerning the

¹⁰⁶ Tarski gave a seminar on "The Syntax of the Sentential Calculus" in spring 1940 at the Young Men's Hebrew Association in New York. A copy of the lectures is found in the Hempel Papers in Pittsburgh. He also gave a different seminar in 1940/1941 on "Problems of completeness + decidability". These lectures are also in the Hempel Papers in Pittsburgh.

¹⁰⁷ On the scandal connected to this invitation see [9, pages 134–137]

monograph translated by you, Hermann (Paris) wrote me several months ago that he was going to send the proofs of it. Unfortunately, he isn't a reliable man: I have not got these proofs hitherto. It is possible that the New York Department of Oxford University Press will decide to publish the monograph¹⁰⁸; in this case I will cable Hermann and cancel the previous agreement. In the meantime Oxford University Press here has finally decided to publish (in collaboration with Allen & Unwin) the English translation of my "Einführung in die mathematische Logik"¹⁰⁹; the material conditions to which we have agreed are rather better than I would expect.

Now the important think [sic for thing]: with the help of Jørgensen¹¹⁰ (who behaves as a genuine friend) I got a month ago some news from my family: Jørgensen enclosed in his letter a short card written by my wife and handed by her to the secretary of former Danish minister in Warsaw. My wife, children and parents are in good health, but in a very hard material situation. Since the problem of my permanent status in this country is already settled, I'm trying now to bring over my wife and children. I sent already American Consul in Warsaw all documents which enable them to get automatically [sic] an immigration visa; but I wonder whether and when they will be able to leave Warsaw.

I have enjoyed very much the news that you and your family are in good health and that you hope to be soon in this country. Do you hope to get a permanent job here? It will be a real, genuine pleasure for me to be able to meet you and to talk to you, to Eden and to your children.

Always yours,

Alfred

p.s. Please don't forget to point out the mistakes in this letter.

¹⁰⁸ It did not.

¹⁰⁹ See [40].

¹¹⁰ Jørgen Jørgensen (1894-1969).

Letter 14. TARSKI TO WOODGER, APRIL 28, 1940.

April 28, 1940

Dear Socrates,

Many thanks for your letter of March 5. I was somewhat disappointed by the fact that you had to delay your trip to the U.S.; but I do hope that you will come here in the near future.

I am very worried by the new development of the situation in Europe—from the general as well as from my personal point of view. My plan to carry over my family through Copenhagen (with the help of Jorgensen) seemed to be near to realization, and now it is completely destroyed¹¹¹; I must look for quite new and much more difficult ways.

In these last weeks I have got some letters directly from Warsaw; Maria and children are in good healthy [sic].

There is no change in my own situation; it is far from being established. I've got no proposal for the next academic year, so that probably I'll be compelled to return to Harvard and to stay there as "research associate." This will be a very indefinite position, and I'll earn very little money. Logic is not in favour here, and the anti-semitism (and, more generally, the "anti-foreigners" feeling) is not essentially weaker than in Poland.

You realize that in this situation I can hardly think about the scientific work.

I have been ill for the last three weeks (an inflam[m]ation of join[t]s) Now I am on the way to recovery, but I'm not allowed to leave my bed for at least ten days.

I'm anxious to know how you get along; don't let me wait too long for your answer. My cordialest greetings to you, to Eden and to children.

Always yours,
Alfred

¹¹¹ Denmark had been invaded on April 9, 1940. Tarski wrote in very similar terms to Józef Bocheński (1902-1995). See [9, page 137].

Letter 15. TARSKI TO WOODGER, SEPTEMBER 5, 1940.

September 5, 1940

Dear Socrates,

I have written to you three times during these last months, but I have not received any answer. Perhaps my letters have not reached you; and even if you have got them, I understand very well that the conditions in which you are living do not favour an intensive correspondence. Nevertheless I should be happy if you let me know how you, and all my hopes for a better future of the mankind (like the hopes of millions other people) are concentrated about the present developments in England.

My own situation is unchanged. I have no permanent job. The next academic year I shall spend at Harvard University as “research associate” (a small salary, but no formal duties, in particular, no obligation of lecturing). An extended and revised English edition of my popular book “Introduction to Logic” is now being published by the Oxford University Press” here; the monograph on “Completeness” has not appeared so far. I am in touch with Maria. She and the children (as well as other members of our next family) are in good healthy [sic], but in very bad material conditions, and their situation seems to go from bad to worse. I do my best in order to bring them here, but so far my efforts have met with no success.

I should like to ask you a favour. Maria is very unquiet in connection with the fate of her younger brother, Antoni Witkowski, and her younger sister, Jadwiga Witkowska; she has not heard anything (or almost anything) from them since the beginning of the war. Before the war he was a captain of the Engineers (sappers), and she a telegrapher in the Polish General Staff. It is clearly seen from Maria’s letters that she doesn’t venture to write explicitly what she knows about their fate. But I guess that they fled together, probably to Romania, and that they are now either interred in Romania or (what seems more probable) stay in France or in England; the girl was during a certain period very ill. Maria mentioned in one of her letters that she had written you in this matter; but I wonder whether you have received this letter. At any rate I’d be very grateful if you tried to find out something about their fate, and possibly to get in touch with them and to inform them about my address;

it is quite possible that the command-in-chief of Polish Army (or the Polish ministry of war) in England knows exactly where they are.¹¹²

My warmest regards to you and your family.

Always yours,
Alfred

My address is: Harvard University, Emerson Hall, Cambridge Mass.

¹¹² As will become clear in the next letter, both Tarski's brother-in-law and sister-in-law were in fact living in Scotland and England, respectively.

Letter 16. TARSKI TO WOODGER, MARCH 19, 1941.

340 Harvard St.
Cambridge Mass.
March 19, 1941

My dear Socrates,

I was very happy when I got your letter of January 20 a short time ago. I could not find any reasonable explanation of your silence and was very unquiet. When I heard later from Carnap that he had received a few letters from you, I began to fear that you were angry with me, but could not guess the reason.

A few days after your letter I received a letter from my brother-in-law. Imagine that—in spite of all you heard from the available sources—both my brother-in-law and sister-in-law are now in England. He is in Scotland, in the army, she is living in London (Jadwiga Witkowska, 14 Blandford Street, Loretto Girl Club, London W.I.). I shall be very happy if you or Eden call on her sometime. If you do so, please tell her that I wrote them twice to the Lisbon address (which I got from my wife) and that I'll write her in the near future.

I am terribly distressed by the dire situation of my family in Warsaw. I am in touch with them, and am even able to send them some money; but all my efforts to get them out from Poland have been unsuccessful so far. It would be to[o] difficult to enter into details; this is a terribly complicated matter.¹¹³ Now is period in which the whole affair seems to have reached its climax; in a relatively short time I shall presumably know whether there is still a hope to bring them here “in einer absehbaren Zukunft” or not.

My own situation remains unchanged. In this year I am formally a research associate in mathematics in Harvard University. I don't have any formal duties, but I am conducting voluntarily a seminar in mathematical logic;

¹¹³ In January 1941, Tarski had written to Heinrich Scholz mentioning a plan to get the family to the USA via Berlin and Siberia. Another attempt was made by Anders Wedberg (1913-1978). See [9, pages 137-138].

my salary is very low.¹¹⁴ For the next year I am appointed a fellow by the Guggenheim Foundation; this is considered here a great distinction and implies a slight improvement in my financial conditions—unfortunately, for one year only. As you see, the situation is far from being settled.¹¹⁵

The Oxford University Press here has just published the English translation of my popular book; the title is “Introduction to Logic and to the Methodology of Deductive Sciences.”¹¹⁶ Strictly speaking, it is not a mere translation, since I added much new material; I hope the book will be largely used as a textbook in colleges. Probably Allen and Unwin will buy 500 copies from my publishers and bring them to England in the near future; I shall have them send you a copy then. My booklet on the Completeness of Elementary Algebra has not appeared so far; I am now negotiating with Harvard University Press concerning its publication.¹¹⁷

I hope I shall be in Providence some time in the spring and shall see Andrew. My warmest regards to you, Eden and the children.

Yours cordially,
Alfred

¹¹⁴ It is surprising that Tarski makes no comment of the meetings with Quine, Carnap, and Hempel that took place in the fall of 1940 and in the spring of 1941. See [18] and [11].

¹¹⁵ The twelve-month appointment began in April 1941 and was extended for another six months.

¹¹⁶ In addition to the translator, Olaf Helmer, the preface to the book acknowledges the help of A. Hofstadter, L. K. Krader, E. Nagel, W. V. Quine, M. G. White, J. C. C. McKinsey, P.P. Wiener and K. J. Arrow.

¹¹⁷ Another attempt to publish *The Completeness of Elementary Algebra and Geometry* that will not pan out.

Letter 17. TARSKI TO WOODGER, JANUARY 31, 1942.

Alfred Tarski

Dr. J. H. Woodger
Tanhurst, Epsom Downs
England

The Institute for Advanced Study
School of Mathematics
Princeton, New Jersey

January 31, 1942

Dear Socrates,

Many thanks for your letter of December 12, which I received three days ago.

I can repeat literally a sentence of your letter: "I am sorry to say that I have very little news for you". My situation is still unsettled. I was appointed for the present year a Guggenheim fellow; this is considered here a big honor, but does not bring much money. For two weeks I have been working at Princeton as a member of the Institute for Advanced Study¹¹⁸; I plan to stay here up to the summer, i.e., up to the end of my fellowship's year. All my efforts to bring here Maria and children were unsuccessful. I hear very little from them, and have but little possibility of helping them.

I am sorry to hear that my Introduction to Logic is unobtainable in England. The book is, I may say, a success: it is used in various colleges as a text, and during the first ten months after it had appeared about 1100 copies were sold. I negotiated with Allen & Unwin in the matter of an English edition of my book, and I hoped I should be able to send you a copy of this edition; unfortunately, the negotiations did not give any positive result. (I am not inclined to accept too bad conditions.)

¹¹⁸ Tarski's stay at the IAS in Princeton with a Guggenheim fellowship began in January and went on to the summer of 1942. During this period, Tarski had frequent exchanges with Kurt Gödel.

Now I am going to send you the last copy of the American edition which is still at my disposal; it is, unfortunately, without binding. But please forgive me the joke on p. 238! I shall also enclose a reprint of my paper on the calculus of relations.¹¹⁹

I am now working on the final draft of The Completeness of Algebra and Geometry; your translation of the original draft is of much use to me in this work. I am extending the original draft and popularizing it; the book will have the character of a general introduction to meta-mathematical investigations. It is to be published by the Harvard University Press.

Please let me hear from you more often.

With best wishes to you, Eden, and the children.

Yours as ever,

¹¹⁹ This refers to [41].

Letter 18. TARSKI TO WOODGER, NOVEMBER 4, 1942.

2606 Shasta Road
Berkeley, California
U.S.A
November 4, 1942

Professor J. H. Woodger
The Middlesex Hospital
Medical School, Devonshire Hall,
Leeds¹²⁰, 6
England

Dear Socrates,

I have a bad conscience since I haven't written you for so long a time. The only excuse is my migratory way of life. When I received your last letter I was in Princeton. I spent July in New York and August in Rockport¹²¹ (near Boston). And now I am 3000 miles away — in California.

It looks, however, as if my migrations were about their end — for the duration of the war, at least. Since the beginning of this term I am teaching in the Mathematics Department at the University of California. It is true, my position here does not have any permanent character. I have been appointed lecturer — which, as you perhaps know, is considered in this country a rather honorable title, but does not belong to the regular “hierarchy”.¹²² And I am appointed theoretically for one year only. But a few days ago there was in local newspapers an enunciation of the president of the University that “Prof. A. T., an internationally known etc. etc. . . ., joined the staff of the University of California for the duration of the war.”

Berkeley is a beautiful place – one of the most beautiful I saw in my life. It is so charming here that people don't seem to bother much about science.

¹²⁰ On account of the war, Woodger's department was evacuated to Leeds. See [10, page 5].

¹²¹ This is where Nelson Goodman had a vacation house.

¹²² Part of the funds for hiring Tarski at Berkeley became available through a Rockefeller foundation grant for “displaced scholars” and another part from a university emergency fund. On the details of the hire see [9, pages 147-148].

After all, life is so short, the weather here so delightful (no summer, no winter), the ocean so immense, the hills so green, the eucalyptus trees so tall – and mathematics is so hard a piece of work. Of course, there are exceptions.

As regards me, I can't yet get rid of old and bad habits, and — in spite of the fact that the preparation of lectures takes me a lot of time — I am still trying to put in writing some old or new ideas. I have just finished an extensive paper on the calculus of relations; and two my papers from the domain of set theory will appear pretty soon. But the book on the completeness of algebra and geometry, which I am rewriting now, is far from being finished!

I hear now but very rarely from my family, and only in an indirect way. They seem to be in relatively good health, but in terribly miserable conditions. So seems to be Mostowski too. Kotarbiński¹²³ is alive but is in Warsaw. Some food packages were sent from here by American logicians to Polish friends (through the Red Cross) — and reached the addressees.

I am anxious to know how you are. I am sorry I did not meet Michael¹²⁴ before I left the East; I think it would be a good idea for him to go for one year in Princeton. How are Eden and the remaining children?

Haven't you met my sister in law, Jadwiga Witkowska? Her address is Mill Hill 5, Westmere Drive, London, N.W. 7.

I hope this will reach you before Christmas; so Merry Christmas [sic] and Happy New Year to all of you. Ever yours, Alfred

¹²³ Tadeusz Kotarbiński (1886-1981).

¹²⁴ Michael Woodger (born 1923) was the eldest son of Joseph Woodger. He became a computer scientist with a distinguished career. See https://wiki2.org/En/Mike_Woodger, last accessed on July 17, 2021. His reminiscences of working with Alan Turing can be heard at <https://www.bbc.com/news/av/technology-18555669/alan-turing-assistant-mike-woodger-recalls-working-with-the-computer-pioneer>, last accessed on July 17, 2021.

Letter 19. TARSKI TO WOODGER, DECEMBER 5, 1943.

December 5, 1943

Dr. Joseph H. Woodger
The Middlesex Hospital
Medical School
London, England

Dear Socrates,

I haven't heard from you for a very long time. I guess it was more than 18 months ago when I got your last letter. I do not know whether you received the letter I sent you in November 1943 and what your present address is. I'll mail this letter to your London address hoping that it will reach you sooner or later.

It seems that the communication between England and this country is still rather irregular. Many letters which I've mailed to London during the last years have not reached addressees. From my sister-in-law I've got during the last eight months but one brief postcard; I know she was ill, but I don't have any idea how she is and what she is doing now.

There is not much new with me. We are working on a three terms schedule, theoretically without any vacations (brief ten days recesses between terms). Since I started teaching here, i.e., since October 1942, I had but three weeks off in June, and I feel very tired. However, in the current year I shall have half term off (May and June); perhaps I shall go east for this time.

My situation here is essentially unchanged; though I have some reasons to look to the future with a certain amount of optimism. Unfortunately, this applies only to my personal situation; that of my family becomes more and more desperate, and I have exhausted all possibilities of helping them. I have received two or three letters from Maria during this year, and all what I found in them was very discouraging.

As always, I am trying to work, but without much success. I haven't yet finished my book on the relation calculus; perhaps I'll give up the idea of publishing a book now, and I shall confine myself to two-three articles.

I have published a rather special paper on set theory (together with Erdős¹²⁵ which could hardly interest you. A long paper by McKinsey¹²⁶ and me ‘The Algebra of Topology’ will appear in print in a few weeks. I have also written a paper of a ‘philosophical’ character — a sort of popularization of my ‘Wahrheitsbegriff’ together with various polemical remarks; it will be published at latest in March.¹²⁷

Thus I have exhausted my news. I am anxious to know how you and your family are getting along. Don’t let me wait too long for an answer.

My best Chris[t]mas and New Year wishes to you, Eden, and children.

Yours as ever

Alfred

¹²⁵ Tarski and Erdős had met in New York. See [9, pages 146-147]. The paper with Erdős is [7].

¹²⁶ J.C.C. McKinsey (1908-1953). The paper referred to is [25]. On Tarski’s friendship with McKinsey see [9, pages 141-143].

¹²⁷ This refers to [42].

Letter 20. TARSKI TO WOODGER, NOVEMBER 9, 1944.

2606 Shasta Rd.
Berkeley 8, Calif.
November 9, 1944

Dear Socrates,

I received your letter about two weeks ago. I am glad to hear that my reprints reached you finally, in spite of all difficulties in transportation. I sent at the same time some reprints to Stockholm and to Jerusalem; the former were returned to me, and the latter got lost.

You were right in expecting that I enjoyed the war news very much, especially during August and September. I was happy to hear that London got rid of those terrible flying bombs. Well, as you know, I am somewhat egocentric, and it will not surprise you to hear that my feeling of happiness was not undisturbed. The fact that at the same time another city — a few hundred miles to the East — was completely destroyed¹²⁸, that hundreds of thousands of people lost their life there, and that among those people were perhaps my loved ones¹²⁹ and certainly many of my best friends who managed to survive the long five years of tortures — was certainly somewhat depressing.

¹²⁸ The Warsaw Uprising had taken place from August to October 1944. After they crushed the uprising — with the Russian troops looking over from the other side of the Vistula — the Germans razed the city.

¹²⁹ Maria and the children were fortunately safe in Cracow but Tarski would not learn this until early 1945. However, most of Tarski's remaining family was killed. Tarski wrote to Heinrich Scholz:

Except for my wife and children, practically my whole family (about thirty people, counting only close relatives) was murdered by Nazis. My parents were killed in 1942. My only brother and his wife were atrociously murdered the day after the end of the Warsaw Uprising. The losses in my wife's family were also heavy. As you probably know, many of my colleagues and former students in Poland have been murdered besides those named in your letter — Pepis, Presburger, Mr. and Mrs. Lindenbaum to mention only a few; the death of the Lindenbaums has strongly affected me personally. (Tarski to Heinrich Scholz, 21 October, 1946; cited in [9, pages 168-169].)

I can realize how annoying it must seem to you that Poles make the relations with Russia somewhat difficult. Well, I think that a sort of philosophical approach to this problem may be useful. You see, these sheep have always bad manners; when a wolf wants to devour them, they try to make it a little difficult to him. Czechish sheep tried to make it difficult to uncle A.[dolf] in 1938, Polish sheep are trying it now (it is true, to another uncle). I agree, these attempts are rather silly; after all, the wolf will always have his way. And I admit that Polish sheep are exceptionally arrogant and stubborn. (I suspect they are not sheep at all — perhaps some disguised goats.) They were solemnly granted the right to die like heroes; they made full use of this privilege — in fights over London, in Narvik and Tobruk, at Monte Cassino and at Arnhem. And these insolent beasts are not satisfied, they want something more — the right to live in freedom.

Well, I hope that some solution will be found. After all, a recipe is known which can always be successfully applied on such occasions. Don't you remember 1938: A Mr. Ch.[amberlain] went to the city M.[unich] and made 'peace in our times'? And, as you know from your own work, the application of the rule of substitution really presents no difficulty.

As regards Michael¹³⁰, I agree with your opinion that it would be good for him to widen his mathematical knowledge; of course, I don't know how advanced in his study he is now. And I should certainly advise him to go somewhere in this country; e.g., for some time to Princeton, and then to Harvard. If he is interested in foundations, he might come here for a while — I'll be delighted to talk to him.

I haven't heard from Mrs. Lindenbaum since 1941. I heard from common friends who were then in Wilno that she was jailed for some time by the G.P.U., but that later she was freed. I am afraid that Gestapo has finished the job.

With best wishes and warmest season's greetings for your whole family.

Yours as ever, Alfred

¹³⁰ Michael Woodger. See Footnote [124](#).

Letter 21. TARSKI TO WOODGER, DECEMBER 10, 1946.

Dec. 10, 1946

Dear Socrates,

It was nice to hear from you — after so long a time. Much has happened to me since. You have heard from Konorski¹³¹ of the most important news — Maria and children joined me a year ago.¹³² They feel relatively well though Maria has not yet entirely recovered from her nightmarish experiences. Children go to school here. My own situation is rather satisfactory; I have a full professorship in Berkeley.¹³³ Intellectually I feel somewhat isolated. I am not giving any logic courses and working entirely in “pure mathematics”¹³⁴, mostly in abstract algebra; a book of mine and also a pamphlet in this domain will appear very soon. A book on the theory of relations (mostly from an algebraic point of view) is being prepared. Introduction to Logic has appeared in the second English edition, a Spanish translation is in print (in Buenos Aires), a Hebrew translation is being prepared, and recently I have received an offer for a Dutch translation; quite a career!

Maria joins me in sending you and your whole family best regards and wishes.

Yours as ever,
Alfred

P.S. If you see Karl Popper give him my best regards and ask to send me a word. I sent him several reprints to New Zealand — probably they did not reach him.

¹³¹ This could be Jerzy Konorski (1903-1973), a Polish neurophysiologist, or his brother, who lived in England.

¹³² Maria, Jan, and Ina arrived in Berkeley on January 6, 1946. The vicissitudes they went through in Europe and their subsequent arrival in Berkeley are described in [9, pages 161-170].

¹³³ Tarski was promoted to full professorship in 1944.

¹³⁴ Tarski’s initial disappointment with the lack of logic at University of California, Berkeley, is described in [9, chapter 6] and in [23].

Letter 22. TARSKI TO WOODGER, DECEMBER 16, 1947.

1001 Cragmont Ave.
Berkeley 8, Calif.
December 16, 1947

Dear Socrates,

It was very nice indeed to hear from you again. Several months ago I received from you a few issues of *The New Statesman*, and I feel ashamed about not having expressed my appreciation in writing. On the other hand, the letter which you sent me some months ago and the manuscript on the problem of lexicographical order did not reach me. (I do not understand why; letters from Poland, for instance, arrive here regularly.) Up to yesterday I was wondering why you left my last year X-mas letter without any answer.

There is not much new with me. I can repeat almost literally one sentence from your letter: “Domestic servants and gardeners are now unobtainable (except for rich people), so domestic duties take up a good deal of such time as is left from teaching”. In fact, I have become almost a professional gardener, and am experimenting a little with some sub-tropical fruit trees (from the Myrtaceae and Rutaceae families). In addition, I had to teach in the summer session to supplement my entirely inadequate professor salary. Still, I managed during these last few months to prepare a few papers for publication. Two of them are purely mathematical, the remaining two rather logical and will appear in the *Journal of Symbolic Logic* (one written jointly with McKinsey).¹³⁵ I have also published (together with my student Jónsson) a booklet¹³⁶ on some problems of abstract algebra and am reading proofs of my book *Cardinal Algebras* (Oxford University Press, New York).¹³⁷

I hope to get a sabbatical leave for the next academic year and to be able to devote more of my time — if not to research in the proper sense — so at least to the preparation of my old results for print. Various results concerning the decision problem are the first item on my programm [sic]. I received an invitation to talk to the congress in Amsterdam, but I am afraid I shall not be

¹³⁵ The article with J. C. C. McKinsey is [26]. The other is [43].

¹³⁶ This refers to [14]. On Tarski’s work with Jónsson see [9, pages 154–156].

¹³⁷ This is [45].

able to go there. The distance between Berkeley and Amsterdam or Epsom Downs is unfortunately so great!

I got a few reprints from Popper. Would you please give him my best greetings when you see him?

What you write about your research sounds very interesting, and I regret that we cannot discuss your problem at length. Your decision to abandon the peculiarities of the Princ. Math. Notation seems to me very reasonable.¹³⁸

I am happy to hear that you have been promoted to professorship; please accept my warmest congratulations — as well as belated congratulations on the occasion of the weddings of your children. My family is well. Maria joins me in sending your whole family our best wishes for Christmas and the New Year.

Yours as ever,

Alfred

¹³⁸ Woodger had adhered to the symbolism of *Principia Mathematica* in all his attempts to formalize biology up to that point.

Letter 23. TARSKI TO WOODGER, NOVEMBER 21, 1948.

1001 Cragmont Ave
Berkeley 8, Calif
U.S.A.
November 21, 1948

Dear Socrates,

Please excuse my delay in answering your letter. During the last few months I have been terribly busy with reading proofs, preparing indexes, etc. of two my [sic] books which are to appear in the near future. One of these books — “Cardinal algebras” — is pure mathematics, something on the border line of set theory and abstract algebra. The second is a monograph “A decision method in elementary algebra and geometry.” Its content is familiar to you — you helped me, I remember well, in revising the English text of its original version. The monograph was scheduled to appear in Paris in 1940, but did not appear as a result of the war. The new version essentially differs from the original one — is more detailed, much more rigorous and hence probably more difficult.

I have read your and Michael’s paper with real interest.¹³⁹ The problem of constructing nominalistic logic and mathematics has intensively interested me for many-many years.¹⁴⁰ I must say, however, that I do not see in your construction a medicine for my troubles. These are my main doubts: (1) I understand sentences like “Every man is mortal”, “Some men are young”; and hence I also understand symbolic expressions of these sentences, like (x) (x is a man \rightarrow x is mortal). These symbolic expressions involve quantifiers referring to unshared names of individuals. But — like Quine¹⁴¹ — I don’t understand the sense of quantifiers (“for every x ”, “there is an x ”) if they refer to anything else but unshared names of existing entities. Hence, to understand your system, I must reject your intuitive interpretation and abandon

¹³⁹ Woodger’s paper, co-authored with his son Michael, was titled “Radical Nominalism”. In early 1948 Woodger had sent Quine the typescript, which is still kept at the Quine archive at the Houghton Library at Harvard University (MS Stor 299, box 9). This essay was never published.

¹⁴⁰ For Tarski’s nominalism see [18, 19, 21, 22].

¹⁴¹ For Quine’s nominalistic commitments see the references in the previous footnote.

the save [sic for safe] ground of nominalism — I must interpret your “shared names” of individuals as “unshared names” of classes. (2) Mathematics — at least the so-called classical mathematics — is at present an indispensable tool for scientific research in empirical sciences. The main problem for me is whether this tool can be interpreted or constructed nominalistically, or replaced by another nominalistic tool which would be adequate for the same purposes. I imagine (though I am not sure) you may be able to reconstruct in your system classical mathematics or a large part of it — you may obtain theorems looking like those of classical mathematics even though the symbols involved in them are not to be interpreted as names of certain entities. If, however, you did not use what seems to me nominalistically inadmissible quantification — discussed above in (1) — I doubt very much whether the reconstruction of mathematics would be possible.

May I add that I don't see clearly why you start with the semantic expression $N(x,y)$, and not with expressions of the object language like $x \in X$. Apart from this detail, your approach to the problem reminds me of that of Leśniewski.¹⁴² Do you know the German account of his Ontology? (I don't remember the exact bibliographic data — you can find them in the Bibliography in the *Journ. Symb. Log.*, vol. 1). The main difference seems to consist in the fact that L. considered shared and unshared names as expressions of the same logical type.

I was happy to hear that you had been appointed Turner Lecturer at Trinity College; I am sure your lectures will be a great success and will result in an exciting book.¹⁴³

Warmest wishes and best regards to you and your whole family.

Yours as ever,

Alfred

[added by Woodger: answered Jan 12 '49]

¹⁴² Stanisław Leśniewski (1886-1939). An account, in German, of his ontology is [16].

¹⁴³ The Turner Lectures were published as [58].

Letter 24. TARSKI TO WOODGER, MARCH 10, 1949.

1001 Cragmont Avenue,
Berkeley, 8, California,
March 10, 1949

Dear Socrates:

It was nice to hear from you. I have read your manuscript and found no mistakes in it. One thing which puzzles me is the use of the word “Semantical” in the title of your paper.¹⁴⁴ It seems to me that for the same reason the term “Semantical” should be put in the title of a great number of papers of logic and mathematics — in fact in all those in which at least one new term is defined.

I wonder whether you are familiar with the work done in modern algebra from the point of view of applications to genetics. I have here in mind, for instance, the articles of Etherington¹⁴⁵ which appeared in the years 1939-41 in various British periodicals as Proc. Roy. Soc. Edinburgh and J. London Math. Soc. Unfortunately these papers are not familiar to me and I do not know what relation they bear to your discussion.

I hope this finds you well. Best regards to you and your family,

Your affectionately

[signed: Alfred]

Alfred Tarski

AT: sm

¹⁴⁴ The title of the paper was “Towards a nominalistic semantics”.

¹⁴⁵ Ivor Etherington (1908-1994). Woodger exchanged several letters with Etherington in 1946-1948.

Letter 25. TARSKI TO WOODGER, SEPTEMBER 27, 1949.

1001 Cragmont Ave
Berkeley 8, Calif.
September 27, 1949

Dear Socrates,

There are no new developments in connection with my trip to London.¹⁴⁶ I know from Provost Pye that they started making inquiry at Fulbright Fund in order to get some money to provide me with air transportation in both directions. (Perhaps I mentioned in my previous letter that I made my acceptance of the invitation dependent on getting this kind of transportation.) I have no idea whether this inquiry has proved successful.

I can't deny that the prospect of lecturing in London scares me a little. I am supposed to give about four lectures in the field of logic and methodology. I am planning to talk about metamathematics in general and to discuss the decision problem with some details. But I have no idea what kind of audience I shall have, what their preparation and main interests will be. If the trip to London realizes, I shall probably stop in Amsterdam and give two talks at the University there.

Certainly I'll be very glad to hear more from you about your new book and discuss with you problems related to it.¹⁴⁷ I regret so often that you're not in Berkeley and that I cannot learn a little biology from you; my interest in this field is always rather intensive, but, unfortunately, always platonic. However, I am afraid that I may be unable to find time for studying your MS. before I go to London. Too bad that I am always so busy. This year I am giving two graduate courses — in algebra and metamathematics — the latter for the first time in my life; furthermore, I am having a seminar and helping a few students who work with me on their Ph.D. dissertation. In addition, I have to prepare those London and Amsterdam talks; and I have two long manuscripts on my desk which are to be completed and sent to publishers (one is a common paper with Jónsson¹⁴⁸, another with Mostowski¹⁴⁹).

¹⁴⁶ Tarski had been invited to deliver the Shearman Lectures.

¹⁴⁷ The book in question is [58].

¹⁴⁸ This refers to [15].

¹⁴⁹ This was what became the second chapter of [48].

How is everything with you and your family? My family is well. Janusz (or rather Jan) graduated from junior high school, in three years will go to the University. Ina – whom you can hardly remember – is 11 years old, in the last grade of public school.

My best wishes to all of you. Maria sends you her best regards.

Yours as ever,

Alfred

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