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Rudolf Carnap

VOLUME ONE

Early Writings

The Collected Works of Rudolf Carnap

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Volume 1

The Collected Works of Rudolf Carnap

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The Collected Works of
Rudolf Carnap

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Volume 1: Early Writings

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Foreword

The Collected Works of Rudolf Carnap contains all the works that Carnap authorized for publication during his lifetime. This volume contains all of Carnap's published works from 1918 through 1926. Rudolf Carnap (1891–1970) ranks as one of the most influential philosophers of the twentieth century, engaging with – among many others – Frege, Husserl, Russell, Wittgenstein, Gödel, and Quine. As W. V. O. Quine wrote of his "teacher and friend": "Carnap is a towering figure. I see him as the dominant figure in philosophy from the 1930s onward." Carnap made substantial contributions to the philosophy of science and to the philosophy of logic, and in particular to the long-standing question of what role philosophy, logic, and mathematics are to play in the scientific enterprise. He systematically addressed a remarkable range of issues, including objectivity, the limits of intelligibility, empiricism, the role of the physical in psychology, convention, the unity of science, semantics, modality, meaning, ontological commitment, probability and confirmation, as well as both the observational and theoretical discourse of science. And he worked tirelessly on behalf of an ideal of science and philosophy that he saw as a cooperative and international enterprise. It is not too much to say that many of Carnap's ideas were revolutionary, a fact that was sensed both by those who revered him in his lifetime and by those who vehemently rejected those ideas.

Carnap worked indefatigably to improve, clarify, and elaborate his views, producing a body of work impressive in its volume as well as in its scope and influence. A brief chronology follows this foreword; what it does not show is that by the late 1920s Carnap was a leading figure of the Vienna Circle, rapidly publishing a stream of papers and books that attained the status of classics. His pivotal work, *Logische Syntax der Sprache* of 1934, ushered in a revolution in philosophy. And following his move to the United States the tide of important publications lifted analytic philosophy to the central position it occupies throughout the world today. His work displays a high degree of coherence and continuity, but its sheer volume makes the broad outlines of its development hard to discern, especially because many of his publications have long been virtually unobtainable. Making this coherence more visible was one motive behind the present effort to make his works available in an accessible,

comprehensive, and definitive form. This edition will contain the tools needed for a more thorough and balanced understanding of Carnap's work, and for the requirements of a new scholarly interest in the historical development of analytic philosophy. The series includes all of the books and papers Carnap authorized for publication in his lifetime. They appear in the language of their original composition, and all in English as well. Where those languages are different, the original and an English translation are on facing pages. Some of the originals have never before been translated into English, and even where they have been, most translations in this *Collected Works* are new or revised. All the texts are reset, re-edited, and provided with introductions and editorial notes to make this body of work accessible to the contemporary reader.

In undertaking this project we have had before us the invaluable example of the edition of Kurt Gödel's *Collected Works*. The five volumes of that collection contain all of Gödel's published writings and a generous selection of the unpublished ones, including manuscripts and correspondence. Even though the present collection is much larger, only Carnap's published works could be included. Parallel efforts have been under way, however, to bring out various selections of Carnap's unpublished notes, manuscripts, and correspondence.

This project has been made possible in part by a resurgence of interest in Carnap's work led by a dedicated group of philosopher-historians, many of whom are on the editorial board or otherwise involved in the editorial process. Their high level of scholarship has made it reasonable to begin such a project, and their unselfish efforts are bringing it to fruition. Their work has in turn made this *Collected Works* more urgently needed. As Carnap's ideas are more widely discussed in books, journals, and university classes, both students and professionals need to have available the full range of Carnap's writing, so that they can see for themselves the systematic and dramatically new conception of philosophy that Carnap developed.

The editors are acutely aware that over the many years of work on the project we have accumulated many debts, as we shall no doubt continue to do, and more than we can hope to repay. The project was initiated by Open Court Publishing Company and its Chairman, André Carus; without this initial support and commitment, the project would not have got off the ground. We are delighted and grateful that Oxford University Press took up the project when Open Court was no longer able to continue and when it seemed that our efforts might otherwise fail. Our editor there, Peter Momtchiloff, has been extremely supportive (and patient) through all the remaining stages, which we greatly appreciate.

Carnap's daughter, Hanneliese Carnap Thost, conveyed the original rights to publish these materials. Her support for the project, and that of other members of the Carnap family, has been a source of inspiration and encouragement over the years. We note with sadness her passing in November of 2016. Her daughter Erika Carnap Thost, who vividly remembers her grandfather from her teenage years, has continued to support our work.

Many other individuals and institutions have been generous as well. In 2000–2001 the National Science Foundation provided a grant for me to con-

duct a feasibility study on the project. For the next five years the College of Liberal Arts and Sciences at Arizona State University supported a research assistant to help turn Carnap's works into an electronic form where they could be edited and reset. Preparing the German text, which involved its own special problems, was made possible by successive two-year grants for 2005–07 and 2007–09 from the Deutsche Forschungsgemeinschaft (German Research Foundation) to a team at the Friedrich-Schiller-Universität Jena headed by Gottfried Gabriel and Wolfgang Kienzler that also included Sven Schlotter (Grant-Nr. KI 1103/1-1 and KI 1103/1-2). In addition, the Fulbright program provided a scholarship to Steve Awodey to support his work in Jena, and the National Endowment for the Humanities provided a Collaborative Research Grant for the same and for editorial assistance. Richard Zach was awarded a University of Calgary Special Projects Grant for his work on the edition. He and Dirk Schlimm received a grant from the Social Sciences and Research Council of Canada as well. These grants allowed their recipients to assume the substantial burden of assembling the text of this first volume and of resolving the enormous number of technical and substantive issues that arise in a venture of this magnitude and complexity. Along the same lines, Richard Zach has been primarily responsible for developing the "Carnap Project Style Manual". This is a huge in-house document that readers never see, even though they benefit from it on every line of every volume.

Finally, I want to add my personal thanks to those who have worked so hard on this volume and to those who are still engaged in preparing future volumes. Some of the names appear in alphabetical order on the various title pages, and some are members of the Editorial Board. They have given unstintingly of their time, efforts, and advice, both as editors of individual volumes and in overseeing the project as a whole. Special thanks are owed for the skillful assistance of Brigitta Arden at the Archives of Scientific Philosophy at the University of Pittsburgh, as well as for that of Brigitte Parakenings of the Philosophisches Archiv at the University of Constance Department of Philosophy. A large team of research assistants has also been invaluable to the overall project; it included Edward Dean, Rodney Gomez, Darin Harootunian, Leslie Hudson, Hans-Christoph Kotzsch, Mia McNulty, Daniel Richter, John Stopple, Dominic Tilbury, June Wagner, and Sandra Woien. Research assistants who worked on a particular volume are thanked in the respective volume's editors' acknowledgements. All of the editors acknowledge and thank each of them for their work, without which this project would have been impossible. And on behalf of the entire Carnap Project, our sincere thanks to all and to our colleagues, students, and families who have been patient and helpful as well. The support we have received from individuals, universities, and granting agencies in several countries has made this a truly cooperative and international enterprise. Carnap would have been pleased.

Richard Creath

Acknowledgements

The editors of this volume are grateful to the many people who have helped bring it to completion and improve its quality. Above all, these include the LaTeX experts on the editorial board who have made it possible to accommodate our editorial intentions in LaTeX within the original series design – Steve Awodey, Dirk Schlimm, and Richard Zach. Their technical and editorial assistance has been indispensable, from the overall architecture down to the minutest details.

We were fortunate that Gottfried Gabriel joined the editorial board of the Carnap edition, since he immediately took on the project of putting together an editorial team – and repeatedly finding funding for it – to establish a definitive German text for all of Carnap's writings in the first five volumes of the edition. We are extremely grateful for Gottfried's role in this component of the edition, which has especially benefited this volume.

We are grateful to David Malament, who contributed an article-length note on the mathematical and physical background to Carnap's paper (1925a) in this volume, thereby making it possible for readers to see Carnap's efforts in the early 1920s from a broader perspective encompassing insights from recent projects broadly similar to the early Carnap's.

We are grateful to the many other colleagues who responded to queries and helped to improve the translations and notes with specialized knowledge about particular aspects of Carnap's work, including Steve Awodey, Erik Curiel, David Malament, Erich Reck, Dirk Schlimm, Howard Stein, Clinton Tolley, Pierre Wagner, and Richard Zach. We are grateful to Richard Creath, the General Editor of this edition, for contributing editorial notes for Carnap's booklet (1926a), and for his thorough and conscientious review of the entire volume when it was nearly complete.

We are particularly grateful to Pierre Wagner for organizing a workshop on *Der Raum*, Carnap's (1922a) doctoral dissertation, perhaps the most substantial text in this volume, in the Palais Clam-Gallas on the Währingerstraße in Vienna, which then housed the French Cultural Institute. This workshop, held under the auspices of his project "Logiscience" funded by the French Agence Nationale de la Recherche, took place on 1–2 June 2010 with the par-

ticipation of Steve Awodey, André Carus, Jeremy Gray, Jeremy Heis, Thomas Mormann, Erich Reck, Alan Richardson, Dirk Schlimm, Erhard Scholz, Clinton Tolley, and Pierre Wagner. The main focus of the discussion were an early draft of Michael Friedman's editorial notes on *Der Raum* and a detailed commentary on some of these notes by Howard Stein (who was not able to attend). We are grateful to Howard and all the participants and especially to the two historians of mathematics, Jeremy Gray and Erhard Scholz, not only for their specific contributions to the editorial notes on *Der Raum*, acknowledged in the relevant passages, but for their willingness to impart their broad perspective on relativity theory and early twentieth-century mathematics in generous detail.

We benefited immensely from the expertise of Brigitta Arden and Brigitte Parakenings, the archivists in Pittsburgh and Konstanz, respectively, who helped us read the marginal notes Carnap had written in his copies of the publications in this volume, mostly in his personalized version of Stolze-Schrey shorthand. We are grateful to the Archives of Scientific Philosophy at the Hillman Library, University of Pittsburgh for their support and their permission to reproduce quotations from documents in their collection of Carnap Papers, to which they hold the copyright.

Finally we are grateful to the research assistants who contributed specifically to this volume, Edward Dean, Hans-Christoph Kotzsch, and Daniel Richter, as well as to the members of the editorial and production group at Oxford University Press responsible for shepherding this unruly project through their system with such assured and patient competence: Peter Momtchiloff, April Peake, Caroline Quinnell, Jonathan Rowley, and Manuela Tecusan.

A. W. Carus
Michael Friedman
Wolfgang Kienzler
Alan Richardson
Sven Schlotter

Chronology of Carnap's Life

1891 Born on 18 May in Ronsdorf, now part of Wuppertal, in Northwest Germany.

1898 Father (Johannes Sebulon Carnap) dies. Carnap is home-schooled until the age of ten by his mother Anna Dörpfeld Carnap.

1901 Enrolls at the Gymnasium in Barmen (now also part of Wuppertal).

1909 Moves with family to Jena, where they live in the house of Anna's brother Wilhelm Dörpfeld, a famous archaeologist; Carnap finishes secondary school.

1910–14 Studies at the University of Jena and takes courses with Gottlob Frege on logic and the foundations of mathematics. During this period Carnap also becomes involved with, and takes a leadership role in, the local manifestation of the German Youth Movement, Eugen Diederichs's "Sera Group".

1911–12 Spends a semester in Freiburg im Breisgau, where among other things he attends Rickert's lectures (possibly together with Heidegger) and gives lectures to the local "Free Students" (the university wing of the Youth Movement) on various subjects, including "Religion and the Church".

1914 Embarks on doctoral work in experimental physics.

1914 World War I breaks out in August and Carnap enlists in the army. Initially assigned to the Carpathians because of his skiing ability, he is transferred to the western front in 1916, where he sees some of the bloodiest action. He also continues to follow the Youth Movement press and enthusiastically reads Einstein's papers on general relativity.

1917 Wounded in action and awarded the Iron Cross. Transferred to Berlin for research on wireless technology. Hears Einstein's lectures on physics. Marries Elisabeth Schöndube, and they move to her parents' house in Buchenbach near Freiburg im Breisgau, where nearly all the texts in this volume are written.

1918 Carnap continues his studies at Jena from Buchenbach. Circulates newsletters containing items from the foreign press critical of the German government, with his own critical commentary. Some months before the armistice, Carnap joins the anti-war Independent Socialist Party (USPD).

1919–20 Completes master's-level dissertations in physics and in philosophy (the latter on the foundations of geometry), and obtains the secondary teaching certificate.

1921 Completes his doctoral dissertation in philosophy, *Der Raum*, under the supervision of Bruno Bauch. Carnap writes to Russell for help obtaining a copy of *Principia Mathematica*, and receives instead a lengthy letter containing the main development in longhand.

1922 Reads Russell's *Our Knowledge of the External World* early in the year, which supplies a key idea for Carnap's envisaged constitution system of all concepts; he writes the first sketch of the *Aufbau*, a manuscript called "Vom Chaos zur Wirklichkeit".

1922 *Der Raum* is published in the series of monograph supplements to the *Kant-Studien*.

1923 Organizes first conference of scientific philosophy in Erlangen, attended by Hans Reichenbach, Kurt Lewin, Heinrich Behmann, and a number of others. Carnap presents "Vom Chaos zur Wirklichkeit" there but finds that no one understands it.

1923–24 Contact with Edmund Husserl and his group at the University of Freiburg.

1925 Writes first draft of the book later published as *Der logische Aufbau der Welt*, and gives a talk in Vienna that is based on it.

1926 Moves to Vienna for "Habilitation" under Moritz Schlick and becomes Privatdozent in philosophy at the University. *Physikalische Begriffsbildung* published.

1927 Begins work on the major project *Untersuchungen zur allgemeinen Axiomatik*. Carnap and other Vienna Circle members meet privately with Wittgenstein. Carnap later excluded by Wittgenstein.

1928 *Der logische Aufbau der Welt* and *Scheinprobleme in der Philosophie* published.

1928–29 Kurt Gödel attends Carnap's course on "metalogic" (officially "The Philosophical Foundations of Arithmetic") in the winter semester.

1929 Gives a popular lecture "Von Gott und Seele [[On God and the Soul]]" at the Ernst Mach Society. Carnap is advised by colleagues not to publish this as it will make it impossible for him to get a job at a philosophy department anywhere in Germany. In October, Carnap gives a series of lectures at the Bauhaus in Dessau. The "manifesto" of the Vienna Circle, the pamphlet *Wissenschaftliche Weltauffassung*, written by Carnap, Neurath, and Hahn, is published to mark the founding of the Ernst Mach Society. Publishes *Abriss der Logistik*, a logic textbook largely written in 1921–23 as an exposition of Russell's letter of 1921. Carnap makes his divorce from Elisabeth official; separated since 1925, they remain friends.

1930 In February, Alfred Tarski visits Vienna; in private conversations he convinces Carnap that the *Allgemeine Axiomatik* project is misconceived. In August, Gödel informs Carnap that he has proved the incompleteness of the usual axiom systems for arithmetic; at a conference in Königsberg in September Gödel announces his discovery, which is published early the following year.

1930–40 Co-edits *Erkenntnis* with Hans Reichenbach.

1931 During a sleepless night on 21 January, Carnap conceives of the "syntax" approach that appears to save the Vienna Circle's doctrines from the discoveries of Gödel and Tarski. In June, Carnap presents his new approach to the Vienna Circle. In the autumn he moves to Prague as professor of *Naturphilosophie* (philosophy of science) at the German University, and embarks on a book-length exposition of the "syntax" approach. Before moving he marries Ina Stöger, with whom he had been living.

1932 "Überwindung der Metaphysik durch logische Analyse der Sprache" and "Die physikalische Sprache als Universalsprache der Wissenschaft" appear in *Erkenntnis*. The latter is the first publication applying the new "syntax" approach. Wittgenstein accuses Carnap of plagiarism. Quine visits early in the year as the first draft of *Logische Syntax der Sprache* is being typed by Ina Carnap. Correspondence with Gödel regarding the first draft of the *Syntax*. In the autumn, after a vacation in the Tyrol with Feigl and Popper, Carnap adopts the "principle of tolerance", first evident in "Über Protokollsätze", which appears in *Erkenntnis* late in the year.

1933 The Nazi seizure of power in January ends any hope Carnap might have for a job in Germany, given his known political and social views. He begins to look for opportunities in the United States.

1934 *Logische Syntax der Sprache* published.

1935 At the International Congress of Scientific Philosophy in Paris, Carnap defends Tarski's semantics. At the same conference, plans for an encyclopedia

are laid, with Otto Neurath. In *Erkenntnis*, Carnap gives Popper's *Logik der Forschung* a largely positive review.

1936 Moves to Chicago to become professor of philosophy at the University of Chicago, after having turned down an offer from Princeton. "Wahrheit und Bewährung", the first publication to reflect Carnap's new embrace of semantics, appears in the proceedings of the Paris conference.

1936–37 "Testability and Meaning" published in *Philosophy of Science*.

1938–62 Co-edits *The International Encyclopedia of Unified Science* with Neurath and Charles Morris.

1939 Carnap's own contributions to the *Encyclopedia* is published, including *Foundations of Logic and Mathematics*. Russell visits the University of Chicago, where he and Carnap engage in lively debates at a joint seminar.

1939–41 On leave from Chicago, Carnap visits Harvard University, where he meets regularly for discussions with Quine, Russell, Tarski, and others. Also, Carnap hears a lecture by Richard von Mises that re-kindles his interest in probability.

1940 Begins work on inductive logic, a project that would continue to be at the forefront of Carnap's attention and to take up the bulk of his time until the end of his life.

1942 *Introduction to Semantics* published. Becomes a US citizen.

1943 *Formalization of Logic* published.

1945 First publications on inductive logic: "On Inductive Logic" in *Philosophy of Science* and "The Two Concepts of Probability" in *Philosophy and Phenomenological Research*.

1947 *Meaning and Necessity* published.

1950 *Logical Foundations of Probability* published; "Empiricism, Semantics, and Ontology" appears in the *Revue internationale de philosophie*.

1951 Quine gives colloquium talk in Chicago confronting Carnap with the wide-ranging critique soon to be published in "Two Dogmas of Empiricism" and other papers. Feigl first approaches Schilpp about devoting a volume of the by now well-established Library of Living Philosophers to logical empiricism. Carnap and Reichenbach are to be the main target figures of the volume.

1952 Carnap moves to the Institute for Advanced Study at Princeton, New Jersey, where he devotes considerable time to a project on entropy that, to

his frustration, the physicists there hardly engage with. *The Continuum of Inductive Methods* published.

1953 After Reichenbach's sudden death in April, Schilpp persists with the plan for a volume in the Library of Living Philosophers, now to be focussed solely on Carnap. By the end of the year, the contributors are agreed on and the papers commissioned.

1954 Most of the papers for *The Philosophy of Rudolf Carnap* are written, and Carnap begins his replies. Carnap moves to Los Angeles as Hans Reichenbach's successor at the UCLA philosophy department.

1956 Finally begins work on the autobiography for *The Philosophy of Rudolf Carnap*, and continues to work on the replies to critics.

1958 The autobiography and replies for *The Philosophy of Rudolf Carnap* are sent off to Schilpp, who asks for substantial cuts. In the autumn quarter at UCLA, Martin Gardner sits in on Carnap's seminar "Philosophical Foundations of Physics" and tape-records the sessions as raw material for a popular book.

1960 After repeatedly delaying the Carnap volume, the publisher of the Library of Living Philosophers, Tudor Publishing Company, terminates its contract with Schilpp. Open Court Publishing Company agrees to publish the series.

1961 Officially retires from UCLA but continues to teach.

1961 Second edition of *Logical Foundations of Probability*.

1963 *The Philosophy of Rudolf Carnap* published by Open Court.

1964 Ina Carnap commits suicide. Carnap's youngest daughter, Hanneliese Carnap Thost, comes to Los Angeles from Germany with her daughter Erika, to look after him. He seriously considers moving back to Germany.

1965 Carnap defends his views on inductive logic against Popper at a conference in London organized by Imre Lakatos, who also edited the proceedings, published in 1968.

1966 The book resulting from Martin Gardner's redaction of Carnap's UCLA seminar, *Philosophical Foundations of Physics: An Introduction to the Philosophy of Science*, is published by Basic Books. (Later editions appear under the subtitle.)

1970 Carnap dies on 14 September in Santa Monica, California, near Los Angeles.

1971 The first part of a new and revised exposition of Carnap's ideas on inductive logic is published in the book *Studies in Inductive Logic an Probability*, volume I (edited by Carnap and Richard C. Jeffrey).

1977 Carnap's efforts to articulate his conception of physical entropy in the mid-1950s are published under the title *Two Essays on Entropy* (edited by Abner Shimony).

1980 The second part of Carnap's restatement of his conception of inductive logic is published in the book *Studies in Inductive Logic and Probability*, volume II (edited by Richard C. Jeffrey).

Information for the Reader

The Texts. The texts included in this volume comprise all of Carnap's publications through 1926. For the most part, only minimal changes have been made to the published texts; those we have made are explained in the "Textual Notes" at the end of the volume. Each text is set with the original German on the verso, and an English translation on the facing recto pages. The only exception is the stand-alone bibliography to 1922a. Setting this on facing pages would have resulted in essentially the same text on both sides. We have opted instead to include translations of the sparse German-language comments in [[double square brackets]]. As explained in the next section, double square brackets are also used to mark editorial insertions into the text.

Editorial and Textual Notes. Each text is followed by a section giving bibliographic information, information on the translation, editorial notes to the text, and sometimes other background. The notes are lettered, and indicated in the margin alongside the main text (when there are more than 26 editorial notes, letters are doubled, i.e. the 27th note is labeled "aa"). These notes are of two kinds: explanatory notes by the editors, and notes recording marginal annotations in Carnap's personal copies of the texts. Carnap's personal copies are held in the Carnap Collection, Archives of Scientific Philosophy (ASP), Special Collections Department, Hillman Library, University of Pittsburgh, and are referenced by box, folder, and item number. Carnap's annotations are usually in shorthand, and were transcribed by Brigitta Arden at the Hillman Library. Changes incorporated into the texts, whether Carnap's or the editors', are recorded in the "Textual Notes". To avoid confusion with Carnap's own use of square brackets, all editorial insertions, translations, and similar comments in the editorial notes and introduction are set in [[double square brackets]]. Interpolations in the translations from Carnap's texts are in [single square brackets].

Page References. Page references in Carnap's texts have not been changed; they refer to the original pagination, which is recorded in this edition by giving the original page number in the inside margin. This also applies to the page numbers listed in the original tables of contents and indices within Carnap's

texts. In the editorial notes, however, page references to the Carnap text they annotate, and also to any other Carnap item in this volume, are to the pagination of this volume, not to the original pagination. The position in the original text (in this volume, the German text) where a page break occurs is indicated by a vertical bar, unless the corresponding page break occurs between paragraphs or just before a heading. The page number of the first page is omitted.

Bibliographical References. Carnap's bibliographical references have generally been maintained as in the original; this includes the bibliographies for 1922a, 1925a, and 1926a. In some cases Carnap's references are incomplete or incorrect, and these are left unchanged. A separate volume bibliography at the end of the volume gives uniform, complete, and corrected bibliographic information for all items cited in Carnap's texts and the editorial materials. If there is more than one item by a single author in a given year, letter suffixes are appended to make the references unique. In the case of Carnap's texts only, letter suffixes are *always* added, and are in correspondence with the year-number system of the bibliography by Benson (1963), so that, for example, Carnap 1922a here corresponds to item 1922–1 in the Benson bibliography.

Archival References. The introduction and editorial notes occasionally refer to archival documents preserved in two places: the Special Collections Department at the Young Research Library, University of California at Los Angeles, manuscript collection No. 1029 (abbreviated UCLA); and the Archives of Scientific Philosophy in the Special Collections Department of the Hillman Library, University of Pittsburgh (abbreviated ASP). Documents at UCLA are referred to by box and folder number, and sometimes also by page number. The documents at ASP are referred to by numbers separated by hyphens (e.g. ASP 001-02-03, where 001 is the box number, 02 is the folder number, and 03 is the document number). Some documents referred to more often are given special abbreviations, which are explained in the text or footnotes.

Index. The index of names covers the main texts and the editorial introductions and notes, with the exception of occurrences of names listed in the bibliographies of 1922a and 1926a, and the separate index to 1926a. To avoid the needless duplication in the Index of Names resulting from German and English text being set on facing pages, the entries there refer only to the German text.

Spelling and Punctuation. The German texts are standardized to the German spelling used in Germany (though not in Switzerland) until 1996 (revised in 2006), now known as *alte Rechtschreibung*, as this standard required the fewest changes to Carnap's own German usage. The English texts use standard American spelling and punctuation, with one important exception: following Carnap's own personal preference, in sentences containing quotations (that do not themselves include final punctuation), final punctuation that American usage puts inside quotation marks (periods and commas), is here placed *outside* the closing quotation mark (as standard in UK usage, which, however, uses

single quotation marks or "inverted commas" in place of the double quotation marks standard in American). The punctuation of entire quoted sentences remains inside the quotation marks. Further details can be found in the section on punctuation in the introductory remarks to the textual notes on p. 441.

Typesetting. The volume has been prepared using Donald Knuth's TEX typesetting system, with Leslie Lamport's LATEX format, Peter Wilson's `memoir` class, and style files by Dirk Schlimm, adapted by Steve Awodey, Dirk Schlimm, and Richard Zach, based on a design by John Grandits. Additional TEX code for preparing the index, textual notes, and typesetting the texts on facing pages was contributed by Richard Zach. The running text is set in ITC Bodoni, the math and symbolic passages in Fourier, and the heads in Monotype Gill Sans. Collaborative editing of the texts has been significantly facilitated by the use of the Subversion, and later Git revision control systems running on a server at Carnegie Mellon University administered by Joseph Ramsey.

Introduction

The apparently very heterogeneous essays gathered in this first volume of Carnap's published writings actually fall quite neatly into three distinct groups, which can each be discussed separately, but which, as we will see, dovetail surprisingly closely: (1) Carnap's utopian conception of the role of knowledge and ideas in society; (2) approaches toward a conception of a system of science or system of knowledge; (3) the *Aufbau* project. Group (1) is represented, in the published writings of this period, only by a brief review article, "League of Nations – League of States?" (1918a), in a political newsletter that appeared irregularly during the German revolution and in the closing weeks of the war. It was to have been followed by a more substantial piece that Carnap wrote soon afterwards (or was working on simultaneously with the published review) about Germany's defeat in the war. In this article, which remained unpublished, Carnap reveals something of the motivation for his early philosophical ideas. Group (2) comprises most of the items in this volume, including a review of a book by the physicist and philosopher Hugo Dingler (1921c), Carnap's dissertation, *Der Raum* [[*Space*]], his first published philosophical paper, "The Task of Physics" (1923a), a further paper, "On the Dependence of the Properties of Space on those of Time" (1925a), and a booklet for general readers *Physical Concept Formation* (1926a). Group (3), finally, includes only the paper "Three-Dimensionality of Space and Causality: An Investigation of the Logical Connection between Two Fictions" (1924a). But this again, as in the case of the single representative of group (1), is the tip of a much larger iceberg. We will discuss each of these groups separately. Given the chronology, however, there will be five steps rather than three: first, group (1); then, two sections on group (2): one on the earliest writings and one on *Der Raum*. A section on group (3) follows, on the initiation of the *Aufbau* project in early 1922. We conclude with a section on the background to *Physical Concept Formation*, where we see some continuities with the earlier representatives of group (2), but now against the background of the *Aufbau* project and the changes it underwent in 1924. The first draft of the book later to be entitled

The Logical Construction of the World was after all written immediately before *Physical Concept Formation*.[1]

1. The Young Carnap and his Utopian Dreams

Before World War I, Carnap had been very active in the German Youth Movement,[2] whose aim, Carnap wrote many decades later, "was to find a way of life which was genuine, sincere, and honest, in contrast to the fakes and frauds of traditional bourgeois life; a life guided by our own conscience and our own standards of responsibility and not by the obsolete norms of tradition." And though the Youth Movement "did not leave any externally visible achievements, the spirit that lived in this movement, which was like a religion without dogmas, remained a precious inheritance for everyone who had the good luck to take an active part in it. What remained was more than a mere reminiscence of an enjoyable time; it was rather an indestructible living strength which forever would influence one's reactions to all practical problems of life".[3] During the war, Carnap remained in touch with the Youth Movement press, particularly the parts of the movement that had responded to the war by becoming more politically engaged, especially in the direction of socialism. In the summer of 1918 Carnap joined the USPD, the breakaway wing of the German social democratic party that had in 1917 repudiated that party's support for the war. He also circulated excerpts from the foreign press to friends, some of whom were in active combat, and was caught by the authorities shortly before the regime change in October (which saved him). During this time, he was also working together with a Youth Movement acquaintance, Karl Bittel, to start a left-wing political newsletter specifically aimed at those who had been active in the Youth Movement. His contribution to the first issue of this newsletter (called *Politische Rundbriefe*) is the brief review published here. It was to have been followed by a much longer and more general reflection on "Germany's Defeat", which however remained unpublished. This text provides a good overview of Carnap's political world view at this time – which underlies, or is at least intimately connected with, his philosophical world view. Of particular importance is his vision of the role of the intellectual in the reconstruction of society.

Carnap takes for granted that Germany was the primary cause of the war: "Our generation and the next have a heavy burden of penance to bear",[4] since "the frame of mind in Europe that made the world war inevitable and then

[1] On the chronology of Carnap's early writings see (Carus 2016) and Ch. 1–5 of (Carus 2007).

[2] The "Sera Group" in Jena that Carnap belonged to represented a specific local variant of the wider German Youth Movement. It is described in its local as well as in its broader intellectual and cultural context by Werner (2003).

[3] Young Research Library, University of California at Los Angeles, Special Collections Department, Manuscript Collection No. 1029, Rudolf Carnap Papers (henceforth UCLA), Box 2, CM3, second folder, pp. B34–5.

[4] Archives of Scientific Philosophy, Hillman Library, University of Pittsburgh, Carnap Papers (henceforth ASP), 110-01-04, p. 14.

made its termination impossible until now" draws its "principal nourishment from Germany" (ibid., p. 16). The academics and intellectuals bear a special responsibility for this, Carnap says, because of their reluctance to dirty their hands with politics, due to their failure to find the right balance between the active and the contemplative life. Addressing the Youth Movement readership of Bittel's *Rundbriefe*, Carnap goes on to pose the question:

> And what is *our* share in Germany's guilt? We do feel a solidarity with the entire German people, i.e., we feel an inner sharing of fate and guilt. But in a more specific sense we feel connected to those among the people who sympathize with us in mode of life, attitudes, and convictions – with people who share the life of the *mind*. *What is their share in* [[*Germany's*]] *guilt?* Their indifference toward political life has various grounds. Of the two polar forces of mental life – *action and contemplation*, which somehow have to find a yet unknown synthesis – the second, quietist, mystical one has perhaps exercised too strong an influence on German people. At this point we ourselves don't know how to find the right balance between these two forces, and yet we must reach the damning verdict: disharmony [[in this respect]] is [[a grave]] fault [[*Disharmonie ist Schuld*]]. (Ibid., pp. 15–16)

This imbalance "belongs to the most fundamental problems whose solution must urgently concern us [[*deren Lösung uns am Herzen liegen muß*]]". (Ibid.) But we who are involved in the life of the mind have also failed, Carnap goes on, to combat those tendencies in our own ranks – within the human sciences [[*Geisteswissenschaften*]] – that complacently accept the past stages of the human race as prescriptive for present and future. That such irresponsible ideas are preached not only by politicians but even by leading professors of the human sciences "is an especially heavy burden on our – the intellectuals' – balance sheet of guilt and our responsibility for the future" (Ibid., pp. 16–17).

What should be our response? Above all, we should not fall into complacency. We must roll up our sleeves and get to work:

> The greater the fault, the more urgent the task. Let us not evade the sense of guilt nascent [[*aufkeimend*]] in us! But let us also not collapse into bitterness or resignation. There is neither sufficient reason nor enough time for this. The time is upon us, for the next years will be decisive in every respect for shaping the world-system and for shaping the reconstruction of peoples.

In particular, we must get used to the unfamiliar (to us) idea of political involvement – but Carnap means "political" in a *very* broad, almost universal sense:

> The experience of recent years has led us to give one particular relation a special significance, i.e., that of politics, in the broadest sense. If we believe that this is where we must now apply the lever,

> we have no fear that by doing so our sphere of activity will be too narrowly circumscribed or too one-sided. For everything belongs to politics, in our view, that has some connection with the public social life of people [[*mit dem öffentlichen Gemeinschaftsleben der Menschen*]], not only the spirit that animates the society but also its structure. . . So all vocations – education and maintenance of bodies and minds, research into the interconnections of nature, mind, and world events, shaping of things or human relations according to inner conviction, production and distribution of the objects that body and mind require for life – are specialized functions according to their kind, but by their effects they are contributions to the same project. (Ibid., pp. 17–18)

"Politics" in this sense meant "everything. . . that has some connection with the public social life of people", i.e., practically all human activities. But – and here is the key to this conception of "political involvement" – for all these activities to work together, it was essential to arrive at a "form of community [[*Gemeinschaftsgestalt*]]" that could serve to coordinate them so as "to remove [[these tasks]] from the realm of chaotic whim and subordinate them to goal-oriented reason [[*der chaotischen Willkür zu entziehen und der zielbewußten Vernunft zu unterwerfen*]]" (ibid., p. 18).

Carnap's view here offers some striking parallels to Auguste Comte's response, a century before, to another cataclysmic political event, the French Revolution. While Carnap had probably not read Comte himself, we know that he was influenced in his youth by the writings of Wilhelm Ostwald, the Nobel-Prize-winning physical chemist who was the head of the German Monist Society during Carnap's student years. Ostwald explicitly identified the "system of the sciences" at the basis of his *Naturphilosophie* with that of the positivist tradition descended from Comte. Ostwald's enthusiasm went far beyond the borrowing of ideas; he became so fascinated with Comte himself that he wrote a biography of him (Ostwald 1914b), and also translated and edited the early essay Comte referred to as his *opuscule fondamentale*, the "Plan of the Scientific Work Necessary for the Reorganization of Society" (Comte 1914).

The passage quoted above, then, echoes the scientific positivist "engineering attitude" descended from the Enlightenment via Comte and Ostwald. And this passage is repeated almost verbatim in the conclusion of the 1923 paper "The Task of Physics". While this underlying motivation for Carnap's early philosophical stance is hardly close to the surface and became even less visible after he came to the United States in the mid-1930s, it is arguably of fundamental importance in understanding his later views (Carus 2007).

2. The System of the Sciences

The first step in developing a "form of community" that could coordinate all the activities in a society to "remove them from the realm of chaotic whim"

and "subordinate them to goal-oriented reason" was to establish a "system of knowledge": just as in Comte and Ostwald, a rational systematization and interrelation of all the knowledge available to humankind was a prerequisite for the rational organization of a society that could optimize the welfare of its members using that knowledge. But Carnap, having been taught by Frege, approached this task in a more rationalist or Leibnizian spirit than the positivist tradition. This was reinforced by the scientifically oriented brand of neo-Kantianism of his teacher Bruno Bauch at Jena, and especially by the highly rationalistic version of the "Marburg school" (which included Paul Natorp and Ernst Cassirer). Rather than conceiving of the relations among the different parts of knowledge as corresponding to different human cognitive capacities or faculties – as in positivism, the *Encyclopédie*, and Bacon before them – he wants the new "comprehensive map" of knowledge to be *logically* consistent and unified in a single system. He wants a "system of knowledge [[*System der Wissenschaft*]]" with "logically consistent foundations and systematic construction of concepts" that is also "capable of comprising all the insights of the special sciences and of presenting them with the greatest possible simplicity and unity" (ASP 081-47-01, p. 3).

But how can the relation between sense experience and mathematical formalism be conceived of as *logical*? This problem is so fundamental and obvious that it had convinced the entire empiricist tradition to ignore or avoid such a Leibnizian approach. The closest they had come to bridging the gap between sense experience and mathematics was the attempt to assimilate or reduce mathematical formalism – perhaps as a matter of "relations of ideas", perhaps in Mill's style, as an extremely secure kind of empirical knowledge – to the empirical realm. Frege had, of course, cast doubt on this assimilation, and Carnap, as we saw, took Frege's critique on board, rejecting Machian empiricism: "The goal", says an early draft of one of the papers in this volume (1923a), "is above all to erect a clear *demarcation* [[*Abgrenzung*]] *vis-à-vis the empirical standpoint* claiming that physics can be built up on the basis of experimental results alone, without positing non-experiential principles".

> Against that it is to be emphasized that... stipulations must be undertaken that are subject to our free choice; that, more precisely, are in no way forced on us by empirical findings and thus can subsequently neither be confirmed nor refuted by them. (ASP 110-05-07, p. 1)

The influence of Poincaré is evident, but it was mediated in Carnap's case not only by neo-Kantians such as Natorp, but also by Hugo Dingler, an odd figure who has not been much discussed in recent literature.[5] Dingler had begun as a disciple of Mach, and indeed published an introduction to Mach's thought (Dingler 1924). Mach, in turn, had endorsed Dingler in the preface to a late edi-

[5] Torretti (1978a) gives a convenient overview of Dingler's philosophy of physics; see also the collection edited by Janich (1984).

tion of *The Science of Mechanics*.[6] It was only after Mach's death that Dingler began to develop a more radically conventionalist view, expressed succinctly in the "principles" set out in the *The Foundations of Physics* (1919a).[7] First is the "principle of stipulation [[*Prinzip der Festsetzung*]]", i.e., "*There is no other way to guarantee the general validity of a law other than its stipulation by the will*" (Dingler 1919a, p. 13). And the "principle of synthesis [[*Prinzip der Synthese*]]" said that in the construction of science "*as much as possible. . . is to be achieved by stipulations arrived at by ourselves and as little as possible by other sources*". Like Poincaré, Dingler stressed that there are conventional as well as empirical elements in our knowledge; but he also held, *unlike* Poincaré, that, since the empirical parts are contingent and uncertain, and since we have full control of the conventional parts, we should minimize the role of evidence and *maximize* that of conventions[8] (ibid., p. 10). When Carnap in later recollections acknowledges that he was "influenced by Poincaré and especially by Dingler",[9] he is also careful to stress that he "did not share Dingler's radical conventionalism and still less his rejection of Einstein's general theory of relativity" (Carnap 1963c, p. 15).

Initially Carnap had seen Dingler's view as close to his own, and "The Task of Physics" was planned as a collaboration. But "Dingler and I gave up the earlier plan of a joint publication when we noticed, at a thorough discussion (September [[1921]] in Jena), that despite agreement in important fundamental questions our standpoints are after all too far apart" (ASP 081-48-04). In the first piece of Carnap's philosophical writing to have survived, an early master's-level dissertation on the philosophical significance of the problem of the "Foundations of Geometry",[10] Carnap discusses at some length the idea 'that (a) physical presuppositions, (b) physical observations, and (c) the geometrical system are mutually determined by functional relations' (ibid., pp. 20–21). Einstein is seen as taking the path of changing (c) and requiring a non-Euclidean geometry "if one regards one and the same measuring rod independently of its place and its orientation as a realization of the same distance" (Einstein 1916, quoted by Carnap in UCLA 1920a, pp. 19–20). Dingler, on the other hand, acknowledges all the same evidence and takes the path of changing (a):

> . . . he chooses – in the full consciousness of free choice – the Euclidean spatial system and decides to keep it no matter what

[6] "At age 74 years, struck down by severe adversity, I will no longer foment a revolution. But I hope for substantial progress from a younger mathematician, Dr. Hugo Dingler, who has. . . retained his free, unprejudiced sense for *both* sides of science [[the empirical and the 'empirio-critical']]" (Mach 1912, p. xxxi).

[7] This is the larger treatise to which the book Carnap reviews in (1921a) is a sequel or parergon. When representing Dingler's views there, he draws not only on the book under review (Dingler 1921c), of course, but also on the earlier books and papers listed in the bibliography to *Der Raum*.

[8] In which he included the laws of logic, e.g., the law of contradiction: "*the application of the law of contradiction rests on my free will. . .* and this is just what we called a stipulation [[*Festsetzung*]]" (Dingler 1919a, pp. 14–15).

[9] UCLA, Box 2, CM3, first two folders, sections 2–11 (henceforth UCLA 1957a), p. D28.

[10] UCLA, Box 3, CM12, only item (henceforth UCLA 1920a).

> experiences occur; this then determines the form of the natural laws. He opposes relativity theory from this standpoint, but only from the principle of simplicity, because it applies its corrections at the "foundation of the building" (the Euclidean spatial system) rather than at the "third floor" (the physical assumptions). (UCLA 1920a, p. 20)

Although he rejected Dingler's conclusions, it seems that Carnap was inspired by the example Dingler set of discussing and appraising science from the viewpoint of a general *Wissenschaftslehre*. "The Task of Physics" is an expansion of the above contrast between Einstein's path and Dingler's as two different ways of interpreting the "demand for maximal simplicity [[*Forderung der Einfachstheit*]]" – as applied *either* to the basic laws or axioms themselves, *or* to the whole of the resulting description of nature. The point of this paper is to show that there is a trade-off between these alternatives, and that simplicity of the axioms (i.e., Dingler's choice) leads to a vastly more complicated overall description.[11]

Despite these disagreements, Carnap asked Dingler whether it might be possible to write a dissertation under his direction at the physics department in Munich. He lists some examples of possible subjects to write about:

> The dependence of physics on the axiom of measurement.
>
> The point of, and justification for, the application of non-Euclidean geometry in physics.
>
> The axiom of congruence in physics; or: The methodological significance of the rigid body in physics.
>
> The relation between kinematics and experience.
>
> The axioms of physics.
>
> On the synthetic (in the sense of: non-empirical) method in physics.
>
> The a priori character of the laws of physics.
>
> The empirical and non-empirical moments in the law of the conservation of energy.
>
> In what sense does the law of the conservation of energy have unconditional validity independently of all future experience?
>
> On the relation between the theory of relativity and experience.
>
> What grounds are ultimately decisive in deciding about the justification of a physical theory, with special reference to the theory of relativity?[12]

[11] In his notes for a 1934 Prague lecture course "Current Trends in Natural Philosophy", he says of Dingler: "Exaggeration of a healthy basic idea [[*eines gesunden Grundgedankens*]]. One *can* stick to chosen basic laws; but that would be highly impractical [[*unzweckmäßig*]]" (ASP 085-66-02, p. 7).

[12] Letter to Dingler of 14 November 1920, Dingler archive at the Hofbibliothek Aschaffenburg, photocopy available at ASP, signature HD-02.

Carnap was clearly preoccupied, during this period, with exactly the problems that his Leibnizian approach to the design of a "system of knowledge" would have led us to expect: On the one hand, how can purely formal theories be applied to observation (how can they – in Kantian terms – be "schematized")? And on the other, how do we (and how should we) distinguish what is *purely* empirical in our knowledge from the "rational ingedients" that (as he had learned from Poincaré and Dingler) suffuse it everywhere? Only when these have been clearly and unambiguously distinguished can we take the further step of attempting to determine just how they are related, and how that relation could be seen as "logical".

One of Carnap's first ventures in this direction, his original proposal for his dissertation, was an axiomatization of relativistic space–time kinematics. The idea here was to show that the whole of (relativistic) physics could be constructed using just two empirical relations – coincidence (of world-lines) and temporal ordering. These are implicitly defined in a series of axioms, from which all the relativistic properties of space and time are deduced; apart from the relations of coincidence and temporal order, these axioms are "purely formal", that is, contain only logical signs. In particular, Carnap claimed to be able to deduce all the properties of (physical) space from just a temporal ordering and the relation of coincidence, neither of which explicitly involves "space". He here uses techniques now familiar from "the causal theory of space-time" – where we begin from the relation of causal-connectibility (connectibility by a time–like curve) and define other spatio–temporal relations (including specifically spatial relations) on this basis.[13]

This system was first proposed in a handwritten summary of June 1920 that Carnap presented to Max Wien at the Jena physics department and to various members of the philosophy faculty as a dissertation topic (ASP 081-06-01). As he describes in his autobiography (1963c, p. 11), it was rejected by the physicists as too philosophical and the philosophers as too scientific. Carnap then pursued a different subject for his dissertation (see the following section, below), but nonetheless developed the axiom system in some detail in a 100-page typescript (ASP 081-02-07) completed in 1924 but never published. The project was briefly summarized in the paper reprinted and translated here as "On the Dependence of the Properties of Space on those of Time", while the axiomatization itself was later used as an example in Carnap's logic textbooks (1929b; 1954c).

3. *Der Raum*

When his first proposal for a dissertation topic (the axiomatization just discussed) was turned down, Carnap fell back on the earlier dissertation about the foundations of geometry he had written for the philosophy department in

[13] For a modern exposition of this approach, see Winnie (1977). For a modern rigorous proof, within this approach, of what is essentially Carnap's result see Malament (1977). Malament himself discusses these and other results on pp. 328–338 of this volume in his "Mathematical and Physical Background to 1925a".

1920, and worked it out in more detail. This became his doctoral dissertation and his first published book, *Der Raum: Ein Beitrag zur Wissenschaftslehre* [[*Space: A Contribution to the Theory of Science*]]. It was largely written in late 1920 and submitted in January 1921 – about nine months after the previous dissertation. On the surface, though Carnap completely re-wrote the text, the two dissertations seem quite similar. *Der Raum* is about twice as long as its predecessor, with more elaborately worked-out examples, but the basic framework is maintained. The confusion about the "foundations of geometry", Carnap maintains, is due to the many different meanings of the word "space". He therefore distinguishes three meanings, which in *Der Raum* he calls formal space, intuitive space, and physical space. And the conclusion is the same: in both dissertations, the arguments among mathematicians, philosophers, and physicists are dissolved by showing that when they use the word "space" (or "geometry") they are talking about different concepts. Also common to the two dissertations is the Kantian conclusion that a certain very abstract *n*-dimensional structure of intuitive space is declared to be "the condition of the possibility of any object of experience whatever" (1922a, p. 67; UCLA 1920a, p. 38).

However, there are differences as well. There is a difference of terminology; where Carnap had previously talked about three kinds of *geometry*, he now discusses three kinds of *space*. And the space corresponding to what had been called "pure geometry [[*reine Geometrie*]]" in the earlier text is now called "intuitive space [[*Anschauungsraum*]]". The structure of intuitive space accorded the status of "the condition of the possibility of any object of experience whatever" has changed; in early 1920, following Russell (1897) and Felix Klein, it had been (pure) projective space of *n* dimensions; in *Der Raum* it has become (intuitive) topological space of *n* dimensions – which now, somewhat confusingly, *shares* this status with *formal* topological space of *n* dimensions. And despite the similarity of the conclusions, there is evidently some change of emphasis; in early 1920, the general form of pure/intuitive space that is "the condition of the possibility of any object of experience whatever" enjoys that status *by virtue* of being "the transcendental–logical function of the a priori form of intuition" (UCLA 1920a, p. 38), while in *Der Raum* the grounds for this conclusion are much more carefully stated.

Underlying these shifts is the development of Carnap's overall conception of logic during the intervening months, when, among other things, he first read through the entire *Principia Mathematica* and took detailed notes (ASP 081-39-03). The 1920 dissertation begins by stressing that, while its starting point will be *deductive* logic ("as represented in algebraic form – on the basis of an idea of Leibniz – by Peano, Russell, Couturat, Frege, and Schröder, among others"), this part of logic

> certainly does not . . . comprise the whole of logic, which after all must specify the laws of deductive procedure in the first place, and which investigates the laws according to which "any possible object of science forms itself into an object to begin with." Deductive logic

> presupposes the objects as already given, so it can't be a primary sector of logic, but can only be erected on the solution to that primary task. (Ibid., pp. 1–2)

The period of about five years after this statement – during which all but the first of the texts collected in this volume were written – saw a process of continual development, from the standpoint expressed here to a quite different one, in which Carnap had unequivocally arrived at the conclusion that the "objects of science" could indeed be constructed by deductive logic alone and that a properly scientific philosophy *confines* itself to such construction, eschewing non-logically "inferred entities" wherever possible.[14] In this process of development, *Der Raum* represents the first step, in which Husserlian phenomenology (absent in 1920) was pressed into service as the "pure logic [[*reine Logik*]]" (or, as Hans Driesch had put it, the "pre-logic [[*Vor-Logik*]]")[15] that could not only "investigate the laws according to which 'any possible object of science' forms itself into an object to begin with" but could also function as the transcendental logic "which after all must specify the laws of deductive procedure in the first place". The launch of the *Aufbau* project was the next step, in which the ideal of "rational reconstruction" is proposed as the route to identifying the objects of science, though at this stage phenomenology still played a major role. In the final phase of this five-year development, as we will see in section 4 of this introduction, phenomenology is jettisoned in favor of a thoroughgoing extension of logical construction right down to the basis of the system.

The introduction of phenomenology, then, is one major difference between the dissertations of 1920 and 1921. In particular, Carnap now explains the "intuition" involved in intuitive space in terms of Husserlian "essential insight [[*Wesenserschauung*]]". It would be tempting to suppose, given this replacement (and also given the later use of phenomenology in the initial phases of the *Aufbau* project, as discussed in section 4 of this introduction), that intuitive space was intended to play an epistemologically foundational role with respect to physical space. One might then think, in other words, that our a priori intuitive knowledge of the structure of intuitive space was supposed to provide an a priori basis for our knowledge of physical space – that our knowledge through phenomenological discernment of the topological structure of intuitive space allows us to infer a priori that physical space has this same structure. As we shall see in a moment, however, this is not in fact Carnap's view.

[14] As suggested in the motto to the *Aufbau*. This does *not* mean that Carnap thought deductive logic "self-sufficient", but it would be much longer before he figured out how to conceive of a legitimate form of meta-perspective for the language of science; Wittgenstein's *Tractatus*, of course, denied any such possibility and created an additional obstacle; only in the "syntax" period of the early 1930s was the solution found.

[15] Driesch's vitalism appears in Carnap's later writings (e.g., 1966a, pp. 13–16) as a classic example of pseudo-explanation. But in the *Aufbau* period, Driesch's *Ordnungslehre* (1912) had been one of the examples of a structural characterization of objects that Carnap had considered.

So what is the point of intuitive space if it does not play such a foundational role? In the first place, it is one of exploring how *formal* space can relate to perceptual experience – it addresses the problem of "schematization" of the purely formal that so preoccupied Carnap during this period, as we have seen. In a 1921 letter to Bertrand Russell (his first), that accompanied a copy of the typescript, Carnap says:

> What may interest you most in the present essay is probably the distinction between "formal space" and "intuitive space" as two quite different objects of a science of space. I believe I have shown here that although geometry can restrict itself entirely to treating a "complex of relations" (geometry as the theory of formal space), on the other hand there is also a different geometry (i.e., as the theory of intuitive space) that cannot fully be derived from formal logic. (ASP 102-68-34, p. 1)

What did Carnap believe that he had "shown"? A subset of Hilbert's axioms (some of them reinterpreted) could, he said, be taken as describing the *Wesenserschauung* of our perceptual experience of objects in a local space. Depending on the conventions we adopt about the global extension of these principles, we obtain various different Riemannian metric geometries. These geometries are arrived at differently from their counterparts in "formal space"; they are not *constructed* from basic notions of logic (as formal geometry is), but *deduced* from intuitive axioms. On the basis of such axioms alone, though, we are unable to single out a *single* Riemannian geometry. We *can* see them all as special cases of a higher-dimensional structure,[16] or of more general – projective and topological – spaces of three dimensions. And using the results of formal geometry for this special case of intuitive geometry, we can combine these directions of generalization and arrive at topological intuitive space of n dimensions, "the most general structure built from intuitive components... the *most comprehensive intuitive space*, which carries within it – partly as components [[*Teile*]] and partly as specializations [[*Besonderungen*]] (constraints [[*Spezialisierungen*]]) by means of further basic structures and basic relations – all other possible intuitive spaces" (1922a, p. 31). It is obviously a stretch to call such a space intuitive,[17] but it can be regarded as a kind of lowest common denominator of spaces that *are* derived from intuitive axioms (ibid., p. 62). This, then, is what Carnap meant by saying that he had *shown* there to be "another geometry (i.e., as the theory of intuitive space) that cannot fully

[16] Such as, in the first instance, four-dimensional metric space. This of course exceeds the power of human intuition to conceive. "But since four-dimensional structures of such regions are built up from intuitively given three-dimensional structures with the help of conceptual relations, a way of imagining them that is related to intuitive grasping, a composite of the intuitive and the conceptual, is possible here." (1922a, p. 30).

[17] Carnap acknowledges the difficulty: "Even this structure will be called an intuitive space, despite the impossibility of comprehending its figures in intuition, insofar as they are of more than three dimensions, since firstly, all intuitable figures that we know in [[three-dimensional metric intuitive space]] occur in [[n-dimensional metric intuitive space]], and secondly because those higher-dimensional figures are also assembled from intuitive components" (ibid.).

be derived from formal logic". An application instance of formal geometry could be arrived at by a different, axiomatic route. And if its axioms codified certain attributes of intuition, the chosen axiomatic geometry could claim to provide a "schematization" of formal geometry.

The choice of axioms for intuitive space made it locally (from a technical viewpoint, infinitesimally) Euclidean, but this did not, without further conventions, require space to be globally Euclidean. The intention was evidently to make intuitive geometry dovetail with the needs of physical geometry, specifically with the requirement that physical geometry be locally Euclidean but globally of variable curvature. In this way, in particular, Carnap appears to be adapting Kant's notion of a form of (spatial) intuition to the needs of Einstein's general theory of relativity. Indeed, when discussing "the mutual relations among formal, intuitive, and physical space" in chap. IV, Carnap asserts (p. 61): "The relation of R' [[topological space]] to R'' [[physical space]] is that of a form of intuition to a structure with this form made up of real objects of experience." Moreover, in the following paragraph Carnap asserts that "the point and purpose" of constructing intuitive space "lies in R'' [[physical space]]", and in his pointer to the literature to this passage he cites "the Kantian conception of R' [[intuitive space]] ... as synthetic lawfulness of the order of experience, and thus of R'' [[physical space]]" as the "purest expression of this relationship" (p. 85).

So it is not as if Carnap were using phenomenological discernment (essential insight) to determine a priori the (topological) properties of intuitive space and then to conclude, on this basis, that physical space, too, must be locally Euclidean. Rather, we now know from general relativity that a full (global) Euclidean structure does not necessarily belong to physical space; and so this structure, in turn, cannot possibly perform the "transcendental function" that Kant had ascribed to it (p. 67): "It has already been explained more than once, from both mathematical and philosophical points of view, that Kant's contention concerning the [['transcendental']] significance of space for experience is not shaken by the theory of non-Euclidean spaces, but must be transferred from the three-dimensional Euclidean space, which was alone known to him, to a more general structure." Einstein's use of a non-Euclidean space of variable curvature for physical space represents the culmination of this process, and Carnap's conception of the "experience-constituting" role of topological intuitive space (including his conception of our essential insight into this space) is developed mainly to meet the requirements of the new *physical* space.

In any case, a consequence of Carnap's approach in *Der Raum* was to make observations geometrically determinate only up to their topological relations. The relative locations of particular events or facts belonging to the "observational basis" [[*Tatbestand*]] could only be characterized in topological terms, not projective or metrical ones (p. 39). In keeping with his neo-Kantian outlook at this time, Carnap describes this distinction as one between the "necessary" form in which the observational basis presents itself and various "optional" [[*wahlfrei*]] forms this basis could then be put into by various metrical geometries and other conceptual tools. As we shall see, however, Carnap

gradually discarded this way of articulating the distinction between experienced chaos and constructed reality (topological and metrical structure), and began to reframe his epistemological outlook in terms of formal logic alone. The modified and attenuated form of Kantianism still present in *Der Raum* gave way, step by step, to a new purely logical viewpoint inspired by Russell.

4. The *Aufbau* Project

Central to the over-arching project of a "system of the sciences", for Carnap, was the idea of developing a "total system of all concepts", and from the summer of 1921, after writing up *Der Raum* and "The Task of Physics", he devoted more attention to this task; "I worked on many special problems, always looking for new approaches and improved solutions", he later recollected of this period. "But in the background there was always the ultimate aim of the total system of all concepts. I believed that it should be possible, in principle, to give a logical reconstruction of the total system of the world as we know it" (UCLA 1957a, p. E4). But what, at the time, did Carnap mean by "logical"?

We have already seen that phenomenology had played a role, for Carnap, in the "schematization" of purely formal structures to make them available to perceptual experience and applicable to the physical world. This idea acquired a new importance in the context of Carnap's task of constructing a "total system of all concepts", for it gave him a key to what he saw at this point as one of the main obstacles to such a system. This obstacle presented itself to Carnap in the terms articulated by the neo-Kantian philosopher Hans Vaihinger in his book *The Philosophy of As If* (1911). Vaihinger took an extreme positivist view of what we actually know: it is only the "chaos" of our immediately present sensations that we have direct access to. The "reality" we construct on this basis, whether in science or in everyday life, is not genuine knowledge but a tissue of useful *fictions* that we invent to get things done in the world and to serve our various needs. It was essentially a pragmatist position, as Vaihinger acknowledged, though he thought that James was wrong to make utility the *standard* of truth; there *is* genuinely true knowledge, Vaihinger maintained, however limited in scope, while the fictions, though useful, are *not* true. They are to be judged by practical results, not by cognitive standards. Vaihinger called his position "positivist idealism", and in letters written during the second half of 1921 Carnap refers to, and argues for, his own "idealistic conception" (ASP 081-48-04) along similar lines.

Carnap was convinced, however, that the realm of genuine *knowledge* could be extended beyond the narrow boundaries Vaihinger had confined it to. He agreed with Vaihinger that it took fictions to construct a "reality" – a "secondary world", as he then called it – but he also thought that these could be (reduced to a more orderly minimum and) chosen rationally,[18] and, most importantly, that a far more extensive "primary world" could be extrapolated

[18] "The *choice of stipulations* is not, however, a matter of whim, but proceeds according to methodological principles" (ASP 110-05-07, p. 1).

from the meager evidence of our immediately present sensations (which would in turn make the choice of fictions for construction of "secondary worlds" easier). "Logic", for Carnap in the early 1920s, was anything that could be used as a tool for such extrapolation, including both deductive logic and phenomenology; and it was the latter that gave Carnap his answer to the question of how to identify what he would later call the *basis* of the system. What qualifies as logic has a different and more secure status than the fictions required for the construction of a "secondary world" (the world of everyday objects, or of relativistic physics) – among which are the two fictions in the title of "Three-dimensionality and Causality". The burden of the paper (as the subtitle says) is to display the "logical" connection of these two fictions (and thus to show that three-dimensionality reduces to causality); "logic", in this case, is not restricted to deductive logic, but also includes, among other things, phenomenological discernment.

Carnap was still prepared to see the distinction between the unique and determinate "primary world" and various possible "secondary worlds" in neo-Kantian terms at this point; it is the same distinction we met above, in *Der Raum*, as that between the "necessary" (topological) form of the observational basis [[*Tatbestand*]] and the various "optional" metrics that could be imposed on it. He distinguishes between the famous Marburg school conception of "experience" [[*Erfahrung*]], which he calls "second-level experience", and the "first-level" experience constituting the "primary world". In "Three-Dimensionality and Causality" he writes:

> The neo-Kantian philosophy does not recognize the primary world, as its conception that the forms of second-level experience are necessary and unique [[*eindeutig*]] prevents it from discerning the difference between the primary and the secondary world. But its genuine achievement, which was to demonstrate the object-creating function [[*gegenstandserzeugende Funktion*]] of thought, remains intact, and underlies our conception of the secondary world as well. (Carnap 1924a, p. 108)

But a significant turning point in Carnap's career had occurred between his exploration of an "idealistic conception" in late 1921 and the initial draft of "Three-dimensionality and Causality" in early 1922. In the intervening winter Carnap had read a book that changed his life and set him on a new course: Russell's *Our Knowledge of the External World as a Field for Scientific Method in Philosophy*. The "principle of abstraction", in the form Russell states it here,[19] gave Carnap the critical hint he needed to solve the immediate

[19] "When a group of objects have that kind of similarity which we are inclined to attribute to possession of a common quality, the principle [[of abstraction]] shows that membership of the group will serve all the purposes of the supposed common quality, and that therefore, unless some common quality is actually known, the group or class of similar objects may be used to replace the common quality, which need not be assumed to exist" (Russell 1914, pp. 44–45). This principle, introduced by Russell in *Principles* to support the reality of relations, and absent from *The Problems of Philosophy*, became something quite different in the 1914 lectures; it became, in fact, the

obstacles to the "total system of all concepts". The main problem was that the positivist strategy of Mach and Avenarius – "analysis of sensations" or deduction of qualities or higher-level entities from basic elements of sense-perception – was not working. Several sets of notes from 1920 and 1921 (ASP 081-05-04, 081-05-06, 081-05-05) show that Carnap tried various kinds of "logic" (including an improvised symbolic fuzzy logic) to extend the "primary world" beyond the holistic chaos Vaihinger had portrayed – but with little success. Russell gave him the idea that the way to extend genuine knowledge was not by *analysis* of experience but by *construction*, gathering similar experiences into equivalence classes and using these in place of the qualities – essentially the procedure of "quasi-analysis" familiar from the *Aufbau*. And this finally answered the perennial question we saw him preoccupied with from the beginning, of how to understand the relation between sense experience and mathematical formalism as *logical*. Carnap's first sketch of the *Aufbau* system, called *From the Chaos to Reality*, essentially sets out this Russellian strategy of construction; the "primary world" of "first-level experience" is extended far beyond the initial chaos by quasi-analysis, then a "reality" is constructed on this basis using just two fictions, corresponding to Kant's categories of causality and substance: a principle of induction (or uniformity of nature) and a principle of "continuity", as Mach had called it – which states that a certain complex of perceptions grouped together into, say, a "physical object", is to be regarded as continuous if the perceptions are interrupted and resume identically (or within a specified range of similarity) before and after the interruption.

This step greatly expanded the scope, within the realm of what counted as logic, of purely deductive logic; in contrast to what Carnap had written in 1920 (quoted on p. xxxi of this introduction), the "objects of science" *could* now be constructed by deductive logic. That task was no longer left entirely to a "primary" part of logic to which deductive logic was subordinate. But this did not yet require the elimination of phenomenology, which on the contrary played a critical role in the discernment of certain features of the original undifferentiated chaos *on* which logic could operate. Most critically, in *From the Chaos to Reality*, a phenomenological distinction between "living" and "dead" experiences (essentially Hume's "impressions" and "ideas", respectively) serves as the basis for the construction of a temporal ordering of remembered and present experience. In "Three-Dimensionality of Space and Causality" phenomenological discernment also plays a major role, especially in the argument (1924a, pp. 113–117) that the observational material supplied by each sense modality is two-dimensional.[20] The central argument of the paper, concluding

central tool of philosophical analysis. It could, Russell now says, "equally well be called 'the principle which dispenses with abstraction' ", and "clears away incredible accumulations of metaphysical lumber" (Russell 1914, p. 51). Interestingly, this idea, which represented such a momentous breakthrough for Carnap, had been suggested to Russell by Whitehead just as he was writing *Our Knowledge of the External World*, and is presented there only as a bare, somewhat confused sketch.

[20] Actually, it is argued that each sense modality is $(2+1)$-dimensional; the time dimension is added to the two spatial ones without discussion. In principle, of course, this

that "*The fiction of the three-dimensionality of space* (equivalent to the four-dimensionality of the world) *is a logical consequence of the law-governed-ness of events*" (p. 106) is hard to classify; it employs a combination of physical arguments, logical inference, and phenomenology. In any case, it illustrates that what Carnap means by "logical consequence" at this point is not restricted to deductive logical inference but still retains a much broader sense.

Even in the *Aufbau* itself, of course, the conception of logic is not quite the modern one, as can be seen, most obviously perhaps, in the proposal to regard the notorious requirement of "foundedness" (for relations employed in the constitution system) as a "basic principle of logic" (Carnap 1928a, § 154, p. 207). In principle, however, the position of the *Aufbau* is unequivocally that of the post-Wittgenstein Vienna Circle. The idea of an antecedently or inherently fixed "primary world" of completely unprocessed perception is entirely banished; it not only plays no foundational role, as it had residually in *From the Chaos to Reality*, but is completely absent. The fiction of an undifferentiated chaos has been jettisoned, along with the phenomenological exercise of discerning structure within it so as to provide the "primary world" with a temporal ordering. So the whole distinction between first- and second-level experience (between "primary" and "secondary" worlds), fundamental to the 1922 conception, has been dropped,[21] and with it went the notion of a purely given world requiring no construction.

Carnap specifically rejects, for instance, his 1924 phenomenological argument for the two-dimensionality of primary experience. Arguments along these lines are "in error", he says, in supposing "that the two-dimensionality of the visual field has to be regarded as ultimately given [[*ursprünglich*]]. In our constitution theory we have recognized that we must regard the two-dimensional order to be every bit as derived as the three-dimensional one, and that it thus presents a problem of its constitution" (1928a, § 124, p. 164). And indeed, the two-dimensional visual field *is* constructed in the *Aufbau* (in § 89 and § 117, with alternative approaches considered in § 92); it is not taken as given.[22]

dimension would also have to be constructed from the undifferentiated chaos, as Carnap does from the phenomenological distinction between "living" and "dead" experience in *From the Chaos to Reality*; he evidently relies here on that previous argument, assuming that it would soon be in print.

[21] It survives vestigially in the transition from two to three dimensions and in the projection of qualities onto world-points, in § 126; this is also where construction by explicit definition stops and optimization subject to constraints takes over. Note that the "Forderungen" in §§ 126–7 correspond closely to the earlier "tendencies" that Carnap had regarded as analogous to the categories of substance and cause.

[22] It should also be noted in this connection that in the constitution of space, the "intuitive space" of *Der Raum* drops out; only abstract (mathematical) space and physical space remain. "Qualitative spatiality" has been expunged: "In the constitution system the peculiar quality of spatiality, though such an essential feature of the external world in experience, makes no appearance *as* a quality, any more than other qualities do: colors, pitches, feelings, etc. For the constitution system concerns itself only with the structural, which in the case of space means only with the formal features of this configuration. But nothing knowable, i.e., conceptually capturable, is thereby lost to the constitution system. For the non-structural cannot, according to the thesis of the constitution theory, be the object of a scientific statement." (Ibid., § 125, p. 166).

It was apparently some time in 1924 that Carnap made the transition from the earlier view to this one. By January of 1925, when he had given a talk on the project at the University of Vienna, the starting point of *From the Chaos to Reality* had already been abandoned. The fiction of the original chaos had been dropped, along with the distinction between a fixed primary world that could be regarded as foundational and the many optional secondary worlds of "reality". So phenomenological discernment had no job to do any more; no pre-existing structure (arising, say, from a distinction between "live" impressions and "dead" ideas) needed to be discerned in an antecedent "chaos". The construction proceeded without such an introductory step. Indeed, the *elimination of subjectivity* had become a top priority for Carnap at this point, as we can see from the three "theses" Carnap started the talk with. The first two are familiar from 1922 ("unity of the object realm [[*des Gegenstandsbereiches*]]" and "methodological solipsism"), but the third was new: "overcoming subjectivity: transition from material to structure" (ASP 081-05-03, 081-05-02). *This* is the context in which we find the idea – now explicitly brought to bear on the system *basis* – of the "possibility of designation by purely structural statements". The idea of a "structural designation" had been there in 1922, as we saw, but it had then been assumed that phenomenological discernment could *identify* the "structures" within the "material" of perception, *before* "structural designation" goes to work on it. The phenomenological exercise of stripping away, in imagination, all "externally imposed" structure from a fictive "original chaos" (and then imaginatively discerning in that undifferentiated mental content two distinguishable "aspects" of experience) was to be *followed by* further, structural characterization of objects *in terms* of this phenomenologically provided basis. Now, in 1925, the idea of "purely structural designation", which had been there from the beginning, was applied more comprehensively and systematically. Step by step, as we have seen, he had left behind the "transcendental logic" he had accepted at the beginning of 1920, as well as the assumption that the "objects of knowledge" had to be identified and constituted independently of deductive logic (in a "primary" sector of "logic"), until he arrived at the conviction that the objects of knowledge can indeed be constituted completely structurally.[23]

5. Rational Reconstruction

This step-by-step transformation in Carnap's conception of logic also brought with it a change in his view of the "system of knowledge". Although his sympathies, as we saw, lay with a rationalist, Leibnizian account of knowledge from the beginning, he was unsure how to implement such a program until Russell had given him the tools to launch the *Aufbau* project. At that point, he began to see this project – the "structural theory of the object of knowledge" [[*Strukturtheorie des Erkenntnisgegenstandes*]] – as an application of a more

[23] More details on this fundamental change in the design of Carnap's *Aufbau* project over the years 1923 and 1924 can be found in (Carus 2016).

general discipline, the "study of structures" [[*Ordnungslehre*]]. But the "rational reconstruction" of our knowledge, enabling us to get our bearings on the terrain of knowledge more generally and to understand how it all fit together, was not only a matter of this abstract study of structures; it was complemented by the "study of science [[*Wissenschaftslehre*]]" the analysis of existing knowledge to determine its internal workings and to see how these fit into various possible structures. Together, these two complementary successor disciplines to philosophy promised to be the vehicles for developing the "system of knowledge" Carnap needed for the highly abstract intellectual "politics" he had resolved to pursue after 1918. He saw all his work to date as contributing to this effort; in a letter to Heinrich Scholz in 1922, he classifies *Der Raum* and "The Task of Physics" as belonging to *Wissenschaftslehre*, while *From the Chaos to Reality*, "Three-Dimensionality of Space and Causality", and a draft of the *Abriß der Logistik* were classified as *Ordnungslehre*. He also makes clear that he plans to focus primarily on the latter study in the immediate future (ASP 102-72-10).

In another document from this period, Carnap describes the enterprise of rational reconstruction (here called "structural reconstruction") in a pair of theses:

> I. The sense [[*Sinn*]] of every scientific statement consists in this: that a particular formal structure is ascribed to a particular piece of reality [[*Wirklichkeitsstück*]].
> II. An object within reality [[*Ding der Wirklichkeit*]] is identified and encompassable [[*erfaßbar*]] within a scientific statement only when its [[conceptual]] neighborhood [[*Gebiet*]] is put in correspondence with a constellation of a particular structure ("structural reconstruction") and it is itself put in correspondence with a particular element of this constellation. (ASP 091-17-12, p. c1[r])

He acknowledges that these two theses seem mutually circular; each refers to the other. His tentative solution to the apparent circularity is to suggest a structural criterion for the whole of knowledge, in which the later *Aufbau* idea of "purely structural description" (as exemplified in the railway map example of § 14) is already evident:

> The circularity that appears to reside in the mutual reference of these two theses to each other is to be resolved as follows: science, insofar as it treats of reality, initially has the task of putting every sphere of reality [[*Wirklichkeitssphäre*]] into correspondence with a sufficiently differentiated constellation, i.e., one in which no two members are structurally similar when the corresponding elements of reality are not identical. When that is the case for all elements of a sector of reality, then the demands of the two theses are met and thus the first task of science, the identification of its objects, achieved. (Ibid.)

And "in place of the Kantian dictum that wants to restrict science to the mathematically quantitative", Carnap suggests that "every science is a science only insofar as the study of structures [[*Strukturlehre*]] is contained in it" (ASP 091-17-12, p. a2). The conception of rational reconstruction, then, had already advanced beyond his actual practice, in which (non-"structural") phenomenological discernment still played a significant role.

Two or three years later, as we saw above, the practice had caught up and Carnap was well on his way to the final *Aufbau*, which appears to have been substantially written in 1925. Immediately afterwards, Carnap wrote one of two small pamphlets he had been asked to contribute to a series of popular expositions of scientific and philosophical subjects for a lay public, *Physical Concept Formation* [[*Physikalische Begriffsbildung*]].[24] It conveys a clear picture of Carnap's overall conception of rational reconstruction in the brief period between the time he had arrived at the (more or less) final form of the *Aufbau* and his encounter with the *Tractatus* when he moved to Vienna the following year (1926). What is most striking about this conception is that the two parts of rational reconstruction – *Wissenschaftslehre* and *Ordnungslehre* – fit seamlessly together. The simplest qualities and the most abstract theoretical sentences are entirely intertranslatable.

The encounter with Wittgenstein would soon destroy this complacently harmonious unity. Carnap, along with the rest of the Vienna Circle, understood the *Tractatus* as promulgating a finitist – what he would later (Carnap 1936j) call a "molecular" – language for science, in which there is no unrestricted quantification over an infinite universe of discourse. Also, the Vienna Circle thought of atomic sentences as recording particular observations, and there could only ever be a finite number of these even if unrestricted quantification were possible. Theoretical physics, then, could not be expressed within such a Wittgensteinian language. This was a fundamental challenge that Carnap spent years attempting to overcome. Meanwhile, however, the idea of a "theoretical language" went into retreat. "This abstract conception of the system of physics", Carnap wrote retrospectively about *Physical Concept Formation*, "was later elaborated in my work on the theoretical language" (Carnap 1963c, p. 16); and many ideas from the earlier book reappear in the popular book *Philosophical Foundations of Physics* (Carnap 1966a). But nearly three decades would pass before that thread was picked up again.

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[24] The other was to have been *Theorie und Erfahrung in der Physik* [[*Theory and Experience in Physics*]], for which Carnap actually signed a contract; and he suggested Feigl as a substitute only when he ran out of time at the last moment. He may well have had some ideas for it that he passed on to Feigl, who certainly acknowledges Carnap's help in the preface. In his autobiography, Carnap mentions that Poincaré's and Duhem's influence "on *my* philosophical thinking" (emphasis added) is evident "in the two small companion volumes on physics by myself and by Feigl written when we were in Vienna" (1963c, pp. 77–8). In 1926 Carnap sketched a talk to be given in Prague that consists almost entirely of ideas spelled out in the Feigl book (ASP 110-07-16A).

The Collected Works of Rudolf Carnap

Volume 1

1918a
Völkerbund — Staatenbund

League of Nations — League of States

ZUR VERWIRKLICHUNG DES RECHTS in der Welt erstreben wir eine über-
a staatliche Organisation. Das Ziel pflegen wir als *Völkerbund* zu bezeichnen, obwohl die Organisationsform, von der gewöhnlich die Rede ist, *Staatenbund* genannt werden müßte. Der einschneidende Unterschied zwischen den beiden Begriffen wird durch die Gegenüberstellung folgender beider Schriften deutlich (allerdings gebrauchen beide den Ausdruck Völkerbund; darum auch wir, ohne aber die Begriffe zu verwechseln):

1. M. Erzberger, *Der Völkerbund, der Weg zum Weltfrieden.* Verlag Reimar
b Hobbing, Berlin 1918. (3.– Mk.). [[Erzberger 1918]]
2. *Vorentwurf für eine Verfassung des Welt-Völkerbundes.* Veröffentlicht vom Schweizer Komitee für Vorbereitung des Völkerbundes, Bern. Ver-
c lag Paul Haupt, Bern, Erlachstraße 23; 1918. (3.– Mk.). [[Vor-Entwurf 1918]]

Die wichtigsten Aufgaben und Wirkungen des Bundes, die mit Notwendigkeit aus seinem Zweck hervorgehen, sind natürlich nach beiden Entwürfen die gleichen: Gewährleistung der Territorien; Gewährleistung der Unabhängigkeit der Staaten im Innern (beides mit gewissen Einschränkungen); Vereinbarung über die Kolonien (Verteilung oder Zusammenlegung); obligatorisches Schiedsgericht (mit Sicherung gegen Majorisierung); Bundesexekutive gegen Friedensstörer durch Absperrung, nötigenfalls durch Waffengewalt; Abrüstung der Einzelstaaten; Freiheit der Zolltarife, aber gegenseitige allgemeine Meistbegünstigung; Neutralisierung der Seewege; Institution zur Ermöglichung freiwilliger Vereinbarungen über sozialpolitische und kulturpolitische Maßnahmen.

Der wesentliche Unterschied zwischen den beiden Entwürfen zeigt sich in den Bestimmungen über das Zustandekommen des Bundes und über Art und Rechte der höchsten Behörde. Erzbergers Völkerbund, der in Wirklichkeit ein Staatenbund ist, entsteht durch den Willen der *Regierungen* der einzelnen Staaten. Diese ernennen je einen Delegierten; die Volksvertretungen haben hierbei nur das Bestätigungsrecht. Der Bund gilt als zustandegekommen, wenn die Großmächte ihre Zustimmung erklärt haben. Die Entstehung des Bundes ist offenbar erst nach Friedensschluß möglich. Der Schweizer Entwurf dagegen geht von den *Volksvertretungen* der verschiedenen Länder aus: diese entsenden noch während des Krieges Vertreter zu einer interparlamentarischen Konferenz, um einen vorläufigen Entwurf des Völkerbundes festzusetzen, der geeignet ist, in den Einzelparlamenten die Zustimmung einer Mehrheit zu finden. Sobald diese Mehrheiten die Bestätigung des Entwurfs durch ihre Staaten herbeigeführt haben, werden die Feindseligkeiten eingestellt und die endgültige Verfassung des Völkerbundes vereinbart. – Die *Initiative* zur Organisation der Welt liegt also im ersten Falle in der Hand der Regierungen, im letzteren bei den Völkern selbst.

Der gleiche Unterschied findet sich bei der Behörde, die an der *Spitze des* 15
Bundes stehen soll. Bei Erzberger bilden die erwähnten Regierungsdelegierten das „Internationale Bureau“, das nur die Verwaltungsgeschäfte besorgt und als Vermittlungszentrale zwischen den Einzelregierungen dient. Nach dem

TO ACHIEVE JUSTICE in the world, we are working toward a transnational organization. This goal is often called a *league of nations*, although the form [a] of organization usually discussed should really be called a *league of states*. The critical difference between the two concepts becomes clear in comparing the following two texts (both of which use the term "league of nations"; we shall therefore do the same, but without confusing the two concepts):

1. M. Erzberger, *Der Völkerbund, der Weg zum Weltfrieden.* Verlag Reimar Hobbing, Berlin 1918. (3.– Mk.). [[Erzberger 1918]] [b]
2. *Vorentwurf für eine Verfassung des Welt-Völkerbundes.* Veröffentlicht vom Schweizer Komitee für Vorbereitung des Völkerbundes, Bern. Verlag Paul Haupt, Bern, Erlachstraße 23; 1918. (3.– Mk.). [[Vor-Entwurf 1918]] [c]

The most important tasks and effects of the league, following necessarily from its purpose, are of course the same under both conceptions: safeguarding of territory; guaranteeing the independence of the member states in domestic affairs (both with certain restrictions); agreements regarding colonies (distribution or consolidation); binding arbitration (with safeguards for minorities); federal executive measures to counter disrupters of the peace by exclusion, or by military force if necessary; disarmament of the individual states; freedom to determine tariffs, though generally with mutual most-favored-nation status; neutralization of shipping waterways; an institution to facilitate voluntary agreements on social and cultural matters.

The essential difference between the two conceptions is evident in the conditions for the formation of the league, and for the form and rights of its top administration. Erzberger's league of nations, which is actually a league of states, comes into being through the will of the *governments* of the individual states. These each nominate one delegate; the representative bodies have only the right of confirmation. The league is officially established when the major powers have given their assent. The establishment of the league is clearly only possible once peace has been made. The Swiss plan, on the other hand, is based on the *representative bodies of the people* of the different nations: even during the war, these are to send their representatives to an inter-parliamentary congress in order to settle on a preliminary draft of the league of nations, one that can achieve the support of a majority in the individual parliaments. As soon as these majorities have induced the respective states to ratify the draft, hostilities will cease and the final constitution of the league will be agreed upon. – The *initiative* for organizing the world is taken in the first case by the governments, in the second by the people themselves.

The same contrast is found in the administration that is to be put at the *head of the league*. Under Erzberger's plan, the delegates mentioned above comprise the "International Office", which deals only with administrative business and serves as a center for communication between the individual governments. Under the Swiss plan, by contrast, a "World Council" is elected

Schweizer Entwurf dagegen wird ein „Weltrat“ von den Bevölkerungen aller beteiligten Staaten durch direkte Proportionalwahl gebildet. In seiner Hand sind Verwaltung, Gesetzgebung und Exekutive vereinigt, er setzt Schiedsgerichte und Fachministerien ein; (dabei sind zur Sicherung gegen parteiische Verwaltung, Überstimmung bei der Gesetzgebung, Vergewaltigung und Interessenjustiz besondere Bestimmungen vorgesehen). Den Regierungen der Einzelstaaten bleibt nur die Sorge für die *inner*staatliche Verwaltung, Rechtsprechung usw. – Nach dem ersten Entwurf bleiben also die Zügel zur Lenkung der Welt in den Händen der heutigen Staatsregierungen; abgesehen von solchen Zwangsvereinbarungen, die zur Vermeidung von Kriegen unerläßlich sind, hängt alles von ihrem Willen ab; die Zentralstelle vermittelt nur, hat selbst keine Beschlußkraft. Nach dem Schweizer Entwurf wird eine neue, machtvolle Behörde geschaffen, die sich mit Übergehung der Einzelregierungen auf die Völker selbst stützt.

Zur deutlicheren Veranschaulichung können wir die geplante Weltverfassung mit unserer Reichsverfassung vergleichen. Mit gewissen Einschränkungen entspricht dann Erzbergers Internationales Bureau dem deutschen Bundesrat, der Weltrat des Schweizer Planes dem Reichstag. Die Frage, ob die Regierungen oder die Bevölkerungen der Einzelstaaten in einer Zentralbehörde vertreten sein sollen, ist im Deutschen Reiche durch Einsetzung *beider* Behörden gelöst worden, wobei die Exekutive bei der einen (in gewissem Sinne auch bei beiden), die Gesetzgebung bei beiden liegt und die Rechtsprechung (wie bei den beiden Völkerbundentwürfen) unabhängig von beiden ist. So könnte nach der Analogie des Bundesstaates auch beim Völker- (bzw. Staaten-)bund an die Einsetzung *zweier* Behörden gedacht werden. Das ergäbe zu den beiden vorliegenden Entwürfen noch etwa eine dritte Möglichkeit.

Welchen Wert hat für uns die Erörterung dieser Verfassungsfragen einer überhaupt noch nicht existierenden Organisation? In einer Eingabe mehrerer Vereinigungen an den Reichskanzler (Hertling) im September 1918, die die Einsetzung einer „Reichskommission zum Studium der Fragen des | Völker- 16
bundes“ anregte, wurde gesagt, es sei kein Zweifel mehr, daß der Völkerbund mit dem Friedensschluß Gestalt annehmen werde; es frage sich nur noch, ob *mit* Deutschland oder *ohne* und *gegen* Deutschland. Die Frage ist gelöst: wie die Zeitungen kürzlich bekannt gaben, ist diese Kommission inzwischen eingesetzt worden. Wir wissen also: Deutschland wird bei der Bildung des Völkerbundes mithelfen. Und jetzt fragt es sich nur noch: *wie* wird er werden? Wenn die Verhandlungen zur Organisation der Welt einsetzen werden, – sicherlich unter lebhafter Anteilnahme der öffentlichen Meinung besonders von Amerika und England –, dann wollen wir doch nicht mit der Gleichgültigkeit, die man bisher in Deutschland diesen Fragen entgegengebracht hat, ahnungs- und ziellos dastehen, wie ein unmündiges Volk, dem eine Verfassung aus Gnaden geschenkt wird. Sondern wir, d. h. die politisch interessierten
d Freideutschen, müssen diese Probleme eingehend durchdenken und besprechen, um das bevorstehende weltgeschichtliche Ereignis (das doch ungleich bedeutungsvoller ist als die Frage der Zugehörigkeit von Elsaß-Lothringen), mit Bewußtsein und grundsätzlicher Klarheit erleben zu können.

by the populations of the member states directly, under proportional representation. Administrative, legislative, and executive functions are unified in the hands of the Council, establishing judicial and ministerial authority (special constraints ensure against partisan administration, disproportional legislation, executive abuses and judicial bias). All that is left for the individual governments to deal with are *domestic* administration, legal systems, etc. – Under the first plan, the reins of power over the world remain in the hands of the current state governments; apart from the obligatory agreements required to prevent wars, everything depends on their will; the Central Office only facilitates, it has no decision-making authority. The Swiss plan creates a new and powerful authority, circumventing the individual governments and supported directly by the people of the nations themselves.

A comparison of the planned world constitution with our own national constitution is illuminating. Erzberger's International Office then corresponds, roughly, to our own council of ministers, while the world parliament of the Swiss plan corresponds to our parliament. The question whether the governments or the peoples of the individual states are to be represented in the central authority is resolved in Germany by the institution of *both* governing bodies, whereby the executive function resides with the first (and to some extent with both), the legislative with both, and the judicial function (as in both plans for the league of nations) is independent of both. Drawing on the analogy of a federal state, one could thus consider instituting *two* governing bodies in the league of nations (or states). This could perhaps give rise to a third possibility, in addition to the current two proposals.

What is the point of considering these constitutional questions for an organization that does not even exist yet? In September 1918 several organizations petitioned the Chancellor (Hertling) urging the formation of a "national commission to study the question of a league of nations". It was stated that there is no longer any doubt that a league of nations will be formed once peace is made; the only question is, will it happen *with* Germany, or *without* and *against* Germany? This question has been answered: as was recently reported in the newspapers, that commission has now been established. We now know that Germany will cooperate in the formation of the league of nations. The only question remaining is, *what* form will it take? When the negotiations begin for the organization of the world – accompanied surely by lively public debate especially in America and England – let us not sit by, ignorant and aimless, with the indifference that has been shown these questions in Germany in the past, like an immature nation mercifully granted a constitution from on high. Instead we, i.e., the politically interested Free German Students, must thoroughly d
examine and discuss these problems in order to experience this impending world-historical event (which is, of course, incomparably more important than the question of Alsace-Lorraine) with full awareness and fundamental clarity.

Zu solcher Klärung gehört allerdings mehr als dilettantische Diskussion aus Augenblicksgefühlen heraus. Ich schlage deshalb vor, zuvor im allgemeinen der grundsätzlichen Diskussion über den Völkerbund in diesen *Rundbriefen* Raum zu geben, aber die schwierigen Verfassungsfragen, darunter auch das angeschnittene Problem: Völkerbund oder Staatenbund, erst einmal einzeln oder im engeren Kreise an Hand der Literatur und mit Unterstützung der Juristen und Nationalökonomen unter uns zu studieren. Auf der Grundlage der Kenntnis sowohl der historisch gegebenen Tatsachen der Außenwelt, als auch der juristischen Möglichkeiten wird dann eine kritische Erörterung fruchtbar werden können.

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Of course, such clarification requires more than a naive discussion based on momentary emotions. I therefore propose that, first of all, space be devoted in this *Political Circular* to the general discussion of the league of nations in principle; but also that, moreover, the difficult constitutional questions – including the one mentioned here: league of nations, or of states – first be studied individually or in smaller groups, drawing on the literature and expertise of the legal scholars and economists among us. Based on this knowledge both of the historically given facts of the outside world, and of the legal possibilities, a critical discussion can then bear fruit.

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