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JØRGEN JØRGENSEN AND LOGICAL POSITIVISM

“I believe that, of all of us, he alone does his worst as a critic of our era.” Otto Neurath characterised the new co-editor of the series *Einheitswissenschaft*, the Danish philosopher Jørgen Jørgensen (1894–1969),¹ professor of philosophy at the University of Copenhagen (1926–1964) with these words in a letter to Rudolf Carnap in November 1934.²

At the time, Jørgensen was already a close acquaintance of both Neurath and Carnap. They met in 1930 at the Seventh International Congress of Philosophy in Oxford, at which Moritz Schlick had spoken of “The Future of Philosophy”,³ and Jørgensen himself gave a lecture on “The Principal Metaphysical Implications of Recent Physical Theories and Points of View”.⁴ He cut such an impressive figure that he was elected to the International Permanent Committee for Congresses of Philosophy, of which he remained a member until 1950, and was encouraged by

- 1 Jørgen Jørgensen’s thinking on philosophy is depicted in C.H. Koch, *Dansk filosofi i positivismens tidsalder 1880–1950*. Copenhagen: Gyldendal, 2004, pp. 187–241. About Jørgensen’s life and work, please also refer to O. Neurath, “Encyclopaedism as a Pedagogical Aim: A Danish Approach” in: *Philosophy of Science*, Vol. 5, 1938, pp. 484–492; J. Witt-Hansen, “Jørgen Jørgensen and the Grammar of Science” in: *Danish Yearbook of Philosophy*, Vol. 1, Copenhagen, 1964, pp. 159–172; J. Witt-Hansen, “Jørgen Jørgensen. 1 April 1894–30 July 1969” in: *Festskrift udgivet af Københavns Universitet i Anledning af Universitetets Aarsfest, November 1969*, Copenhagen: The University of Copenhagen, 1969, pp. 241–247; J. Witt-Hansen, “Obituary on Jørgen Jørgensen” in: *Logique et analysis*, N.S. Vol. 12 (No. 46), pp. 121–122; N.E. Christensen, “Jørgen Jørgensen as a Philosopher of Logic” in: *Danish Yearbook of Philosophy*, Vol. 13, 1976, pp. 242–248; J. Faye, “København og den logiske positivisme” in: Th. Søderqvist, J. Faye, H. Kragh & F.A. Rasmussen (eds.), *Videnskabernes København*, Copenhagen: Roskilde Universitetsforslag, 1998, pp. 43–55; and C.E. Bay, “Den unge Jørgen Jørgensen som repræsentant for den kritiske idealisme” in: *Kulturradikale kapitler fra Georg Brandes til Otto Gelsted*, Copenhagen, C.A. Reitzel, 2003, pp. 127–146. An almost complete list of Jørgensen’s publications is available in *Danish Yearbook of Philosophy*, Vol. 1, 1964, pp. 183–196. A number of Jørgensen’s most important articles are collated in *Danish Yearbook of Philosophy*, Vol. 6, 1969.
- 2 Letter of 14 November 1934, quoted in Brian F. McGuinness (ed.), *Unified Science. The Vienna Circle Monograph Series*. Originally edited by Otto Neurath, now in an English edition, with an Introduction by Rainer Hegselmann. Dordrecht/Boston/Lancaster/Tokyo: D. Reidel, 1987, p.xv.
- 3 *Proceedings of the Seventh International Congress of Philosophy*, held at Oxford, Great Britain, September 1–6, 1930, Oxford: Oxford University Press, 1931, pp. 112–116.
- 4 “Some Remarks Concerning the Principal Metaphysical Implications of Recent Physical Theories and Points of View”, *ibid.*, pp. 1–8.

Schlick, Léon Brunschwig and Federigo Enriques to contribute to their respective journals. A year later, Carnap sent his *Abriss der Logistik* (1929) to Jørgensen, whose letter of thanks mentioned that he had already read Carnap's earlier work, *Der logische Aufbau der Welt* (1928).⁵ In March 1932, at Hans Reichenbach's invitation, Jørgensen gave a lecture in Berlin at the *Gesellschaft für empirische Philosophie* entitled "Über die Ziele und Probleme der Logistik". Later that year, he arranged for both Carnap and Neurath to visit Copenhagen and hold guest lectures.⁶ In advance of the meeting in Berlin, Carnap sent Jørgensen parts of his manuscript for *Die logische Syntax der Sprache*, which they had discussed in both Berlin and Copenhagen. According to a first-hand account given by Jørgensen to the author of this article, it was he who suggested the title for Carnap's book. Following the book's publication, Jørgensen wrote an enthusiastic review of it in *Erkenntnis*.⁷ Jørgensen had thus been accepted into the logical positivists' circle, a movement that supporters called "our circle" or "our movement", and within a short time he was involved in both editorial and organisational activities.⁸ At the 1935 *Congrès international de Philosophie Scientifique*, held in Paris, a motion was passed that future congresses would sponsor a project to compile

5 See concept to letter of 5 September 1931 from Jørgensen to Carnap, "Jørgen Jørgensens Papirer", I. Letters, capsule 2, The Royal Library, Copenhagen. Jørgensen's correspondence with logical positivists consists mainly of letters from Otto Neurath concerning editorial and organisational subjects and conceptual drafts for answers. Part of the correspondence with Neurath regarding the planning of *Zweiter internationaler Kongress für Einheit der Wissenschaft*, which was held in Copenhagen, and for which Jørgensen acted as secretary. Jørgensen's opening address is printed in *Erkenntnis*, Vol. 6, 1936, pp. 278–285.

6 See letter from Carnap to Jørgensen of 4 November 1932 in "Jørgen Jørgensens Papirer".

7 *Erkenntnis*, Vol. 4, 1934, No. 6, pp. 419–422.

8 Much of the information about Jørgensen's relations with the logical positivists and his participation in their meetings is based on his autobiography, which was printed in *Festskrift udgivet af Københavns Universitet i Anledning af Universitetets Årsfest, November 1966*, Copenhagen: The University of Copenhagen, 1966, pp. 139–149; and in "The Development of Logical Empiricism", *International Encyclopedia of Unified Science*, Chicago: The University of Chicago Press, 1951, Vol. II, number 9, pp. 40–48. An extended version of Jørgensen's account of the history of logical positivism had been previously published in *Festskrift udgivet af Københavns Universitet i Anledning af Hans Majestæt Kongens Fødselsdag, 11 March 1948*, Copenhagen: The University of Copenhagen, 1948, pp. 1–97. In the same year, a special edition was published with the title *Den logiske Empirismes Udvikling*. On 4 February 1937, Neurath asked Jørgensen to write an outline of the history of logical positivism, and Jørgensen consented the same month, although he also made it clear that he would not be able to finish the work until late 1938. On 6 May 1937, Neurath accepted the proposed deadline for submission, but the outbreak of hostilities delayed the work until after World War II. The letters mentioned (and Jørgensen's draft letters) are available in "Jørgen Jørgensens Papirer", see Note 5.

an *International Encyclopedia of Unified Science*. The organising committee for the project consisted of Jørgensen, Neurath, Carnap, Philipp Frank, Charles William Morris and Louis Rougier. At the 1938 logical positivists' conference in Cambridge, Jørgensen, along with Carnap, Frank and Morris, became an associate editor of the series *Library of Unified Science*, which was edited by Neurath.

I

Jørgen Jørgensen was born 4 April 1894. His father, a church minister, died in 1901. His Christian upbringing seems to have turned Jørgensen against all forms of religiosity from an early age. In 1912, he started to study philosophy at the University of Copenhagen, and within a year was awarded a gold medal for a prize essay on Schopenhauer's epistemology and its relationship to Kant. In his essay Jørgensen followed the neo-Kantian Marburger School founder Herman Cohen's rejection of Schopenhauer's critique of Kant. It was as a young neo-Kantian, as a critical idealist, and as a supporter of the Marburger School's epistemological interpretation of Kant's transcendental philosophy that he embarked upon his philosophical career. He maintained this position throughout his time as a student, in conscious opposition to that of his teacher Harald Høffding (1843–1931), whose philosophy was more empirical and positivist, and who favoured a psychological interpretation of Kant.

The Marburger School saw Kant's critical idealism first and foremost as epistemology. In order to avoid accusations of subjective idealism, i.e. of presuming that reality does not exist outside of consciousness, Kant claimed that behind the sensory impressions that make up the material of human knowledge lies a world of the thing *per se* ("Dinge an sich") of which we have no cognition. The neo-Kantians de-ontologised this hypothesis, and instead considered the concept of actual reality to be an expression of an epistemological ideal that science, as part of an unfinished process, constantly tries to approach. Jørgensen never abandoned the idea that human cognition develops in a continuous approximation to the truth, even though over the years he replaced his critical idealism with empiricism and critical realism. For example, he wrote in 1926:

It runs like a red thread [...] through all development that it leads to ever more clear and safer concepts of existence, and it can therefore be considered as *a number of successive approximations or approaches to the truth*.⁹

Along with Kant's demonstration that a metaphysical, holistic view of a reality that reaches beyond the empirical world is excluded, this de-ontologisation of

9 J. Jørgensen, *Filosofiske Forelæsninger som Indledning til videnskabelige Studier*, Copenhagen: Levin & Munksgaard, 1926–1927, p. 13.

“things *per se*” led to the Marburger School rejecting all metaphysical interpretations of Kant’s critical idealism. For the Marburgers, the most famous of whom were Herman Cohen, Paul Natorp and Ernst Cassirer, philosophy was “the theory of principles of the sciences and consequently of all culture.”¹⁰ Throughout his life, Jørgensen maintained the school’s anti-metaphysical posture. While still a student, he expressed his critical attitude in a short book about Henrik Bergson, published in 1917. He ends it with the words:

There does not appear to be a single word in all of B’s philosophy that designates a real scientific concept; and should there be one, then according to his view of conceptual cognition it would only be there because of inconsistency or negligence. This much is clear: that from an intellectual standpoint his theories are untenable, not so much because they postulate something that is wrong, but because in the final analysis they say nothing. They are mainly streams of words that often sound good, but are ultimately empty.¹¹

Jørgensen graduated in 1918 as a Master in philosophy, which in those days was akin to a combination of a modern bachelor’s and master’s degree in Philosophy as well as a PhD. His major thesis, which corresponds to the present-day PhD thesis, dealt with Herman Cohen’s philosophy. When Cohen died in the same year that Jørgensen was writing his thesis, he reworked it into a small book about Paul Natorp.¹²

II

In the years immediately following his graduation, Jørgensen radically changed his philosophical attitude. One reason for this was his increasing interest in formal logic, the philosophy of mathematics, and, in particular, Bertrand Russell’s empirically oriented philosophy. In his autobiography he refers to Russell, whose personal acquaintance he made in the 1930s, as his “great model” of the time.¹³ However, he also mentions Herbert Iversen (1890–1920), a legendary figure in Danish philosophy, who in 1918 had published *To Essays om vor Erkendelse* (*Two Essays on our Knowledge*).¹⁴ With this book, Iversen made himself a spokesman

10 From H. Cohen and P. Natorp’s foreword to E. Cassirer, *Der kritische Idealismus und die Philosophie des ’gesunden Menschenverstandes’*, Gieszen: Alfred Töpelmann, 1906.

11 J. Fr. Jørgensen, *Henri Bergson’s Filosofi i Omrids*, Copenhagen: Nordiske Forfatteres Forlag, 1917, pp. 83–84.

12 J. Fr. Jørgensen, *Paul Natorp som Repræsentant for den kritiske Idealisme*, Copenhagen: Nordiske Forfatteres Forlag, 1918.

13 *Festskrift 1966*, op.cit., p.145.

14 H. Iversen, *To Essays om vor Erkendelse*, Copenhagen: H. Aschehoug & Co, 1918. Iversen’s philosophy is described in E. Rubin, *En ung dansk Filosof og hans Værk samt Erindring og Erkendelse, en Dialog*, Copenhagen: Gyldendal, 1920, pp. 9–69;

for an extreme form of empiricism, and influenced Jørgensen in an empirical direction. Iversen's importance for Jørgensen's philosophical development was expressed, for example, in the lecture entitled "The Development of Empiricism in Scandinavia", which Jørgensen gave in 1935 at the International Congress for Scientific Philosophy in Paris. It outlined the main principles of Iversen's philosophy and drew parallels with contemporary developments in logical positivism.¹⁵ As early as his student days, Jørgensen had read Ernst Mach's *Die Analyse der Empfindungen* (1900) and *Erkenntnis und Irrtum* (1905), and Mach's pupil Karl Pearson's *The Grammar of Science* (1892). However, it seems that it was not until he encountered Iversen that he accepted Mach's monism and his idea of the unity of science, and Pearson's assertion that "the universe is largely the construction of each individual mind" and that "the unity of all science consists in its method alone, not in its material."¹⁶ In full agreement with both Mach and Pearson, Jørgensen wrote in 1928 that the physical picture of the world "is a construction, which is formed by connections on the basis of our direct experiences".¹⁷ In the same year, Carnap's *Der logische Aufbau der Welt* was published, and considering the above quotes and his interest in formal logic, Jørgensen must have read the book with great interest. The perception of science as unified, and empirical monism's teaching that all science is ultimately based on experience, had from the early 1920s, become basic principles in Jørgensen's philosophical thinking.

III

In 1924, the Royal Danish Academy of Science and Letters, at Harald Høffding's request and with Jørgensen in mind, called for submissions for a prize thesis, the subject of which was announced as follows:

To examine the principal forms that general logical theories have assumed in the work of Boole and his successors, with a demonstration of their historical development and their relation to classical logic and an indication of the position which logic should, according to these theories, occupy in relation to philosophy and mathematics.¹⁸

and in Koch, *Dansk filosofi i positivismens tidsalder*, op.cit., pp. 395–418.

15 J. Jørgensen, "The Development of Empiricism in Scandinavia", in *Actes du Congrès international de Philosophie Scientifique*, Paris: Hermann, 1936, Vol. 8, pp. 62–67.

16 K. Pearson, *The Grammar of Science*, Third ed., London: Adam & Charles Black, 1911, p. 12 & 15.

17 J. Jørgensen, *Filosofiens og Opdragelsens Grundproblemer*, Copenhagen: V. Pios Boghandel & Poul Branner, 1928, p. 36.

18 See *Det Kongelige Danske Videnskabernes Selskabs Forhandlinger June 1923–May 1924*, Copenhagen: The Royal Danish Academy of Sciences and Letters, 1924, pp. 136–137.

Jørgensen threw himself into the assignment with great vigour, and spent 18 months writing a 1,034-page response, all the while keeping up a full-time day job as secretary to an employers' federation. The huge scale was partly due to the fact that Jørgensen refused to restrict himself to what was necessary in order to respond to the assignment, because he wanted to write a handbook in modern, symbolic logic and to discuss the philosophical reflections to which it had given rise. Jørgensen's thesis was awarded a gold medal in 1926, and in the same year he was appointed professor of philosophy at the University of Copenhagen, a position he retained until his retirement at the age of 70 in 1964.

Jørgensen's prize thesis was published in English in 1931 in three large volumes, and entitled *A Treatise of Formal Logic*.¹⁹ The work is a monument to formal logic and to the development of the philosophy of mathematics until 1924. Ironically enough, it was published during the same year that Bertrand Russell's attempt to develop mathematics from formal logic, a project supported by Jørgensen, was dealt its deathblow by the Austrian mathematician, logician and philosopher Kurt Gödel. Gödel succeeded in proving that there are mathematical truths that – given the finite, (i.e. finitely controllable) methods of proving them that logic employs – could never be proven within logical systems except at the expense of the systems' consistency.

The work's first volume described the historical development of logic from Ancient Greece to the present day. The second explained systematically classical logic, logical algebra and modern symbolic logic, culminating in a similarly systematic account of the attempt to derive mathematics from logic. The third volume focused upon Russell's logistics and the problems inherent in the attempt to derive mathematics from logic. Herein lies Jørgensen's independent contribution to the philosophy of logic and mathematics.

There are two discussions in Jørgensen's work that point towards his later interest in philosophy of logic and his increasing scepticism about formal logic's attempt to identify the conditions and criteria for logical implication. One of these addresses the relationship between logic and psychology, the other concerns whether, and to what extent, the meaning of statements and logical operations is relevant to the identification of such conditions and criteria. Where the first discussion focuses on the relationship between the real and formal sciences and their possible connection within a unified science, the second addresses whether, and to what extent, extensional logic presupposes intentional logic.

Very traditionally, Jørgensen assigned to logic the job of analysing and criticising human thinking, as expressed in linguistic utterances. While it is the job of logic to decide on the logical validity of inferences – i.e. whether the thinking is in accordance with itself – it is the job of psychology and linguistics to empirically

19 J. Jørgensen, *A Treatise of Formal Logic, its Evolution and Main Branches, with its Relations to Mathematics and Philosophy*, Vols. 1–3, Copenhagen/London: Levin & Munksgaard/Oxford University Press, 1931.

explore those forms of inference that actually exist. This entails empirical material being among logic's actual preconditions, which leads to the conclusion that the possibility of a complete logic can be excluded:

Thus also logic can never be regarded as having a definitive foundation, for since the forms and rules of operation can only be arrived at by analysis of material procured by induction, we never know whether this is exhausted, or whether new forms and rules yet remain to be found.²⁰

Jørgensen's view of logic in *Treatise* was quite different from the one espoused by his great role model Bertrand Russell, for whom the world of logic is a world of immutability, one which is explored by means of conceptual methods and not through experience. Jørgensen saw it differently, arguing that logic does not include a conceptual recognition of a timeless world, but is based on knowledge of processes of thought extracted by means of introspection, and on an analysis of linguistic utterances. Jørgensen, the anti-metaphysicist, had to reject the Platonic metaphysics underlying Russell's understanding of logic and mathematics.

In an implicit rebellion against a formalist conception of logic, Jørgensen rejected the idea of the logician as a nominalist – i.e. one who regards symbols as just signs, the meaning of which is given by dint of the rules that decide which combinations of signs are permissible:

Logistic symbols and groups of symbols (definitions and propositions) [must] always have a meaning, and it is this meaning that determines the rules for manipulation of the symbols.²¹

Jørgensen also asserted the same opinion after he encountered logical positivism. For example, in his March 1932 lecture to *Gesellschaft für empirische Philosophie*, he remarked:

Man kann vielleicht [...] behaupten, dass eine jede extensionale [Logik eine intensionale] voraussetzt, denn die Konstruktion der Wahrheitsfunktionen setzt voraus, dass die atomaren Sätze nicht völlig sinnlos sind, sondern wenigstens so viel Sinn haben, dass man voneinander und von ihren Negation unterscheiden kann. [...] In diesem Sinne ist also die intensionale Logik fundamentaler als die extensionale, und es scheint verfehlt, die Logik rein extensional aufbauen zu wollen, wie es in „Principia Mathematica“ versucht ist.²²

However, by the mid-1930s, Jørgensen had changed his mind, both on the role of empirical psychology and linguistics in connection with logic's theory of inference, and also on his assertion in *Treatise* that the meaning of the symbols

20 J. Jørgensen, *Treatise*, op.cit., Vol. 3, p.207.

21 Ibid., p.145.

22 J. Jørgensen, “Über die Ziele und Probleme der Logistik”, in *Erkenntnis*, Vol. 3, 1932, p.93. Jørgensen himself attributed special weight to the bit inserted in brackets.

determines the rules for their use. Five years after the publication of *Treatise*, he gave a series of lectures in which he briefly introduced the development of formal logic, as described both historically and systematically in the work, supplemented with an account of further developments since 1925. In accordance with Carnap in particular, he was now of the opinion that:

The most important result of general significance which the most recent logical studies have brought us are [...] probably proving that in logic itself, this theoretical stronghold of absolutism, there is an extensive system of conventional factors, which to some degree or other can be changed arbitrarily. [...] Different logical games [i.e. formal systems with fixed rules for formation and transformation] are possible, and there is no particular compulsion to choose between them. However, if you want to play a particular one of them, then you have to observe its rules – otherwise it just is not the appropriate game you are playing, even though the pieces perhaps look the same. It is, you see, not the pieces but the rules of the game that define the game – both *that* on the whole it is a game, and *which* game it is.²³

Any given system of logic can be compared to a board game like chess. The individual symbols are pieces whose movements are bound by rules; the axioms are the pieces' starting positions; and there are rules, so it is always possible to decide whether a position has been achieved in the correct manner. Following the latest developments in logic, and especially as a result of the impact of the opinions that characterised 1930s philosophy of logic, Jørgensen became a formalist and abandoned the idea that an intentional logic had to form the basis for an extensional logic. "The suggestions put forward for an intentional logic," he now wrote, "all suffer from the defect that they operate with highly uncertain and vague *concept of meanings*, which despite many efforts hitherto nobody has yet clarified."²⁴ He is referring here to Carnap, who had argued that when logic is asked to do its job, i.e. identify criteria for when a statement follows logically from one or more other statements, it is unnecessary to include the meaning of these statements, and who had therefore concluded: "A special logic of meaning is superfluous; 'non-formal logic' is a *contradictio in adjecto*. Logic is syntax."²⁵

Jørgensen also expressed support for significant elements of logical positivism in a lecture entitled "Die logischen Grundlagen der Wissenschaften", which he gave at the Eighth International Congress for Philosophy held in Prague in 1934.²⁶ In it, he described any given science as an orderly string of sentences in

23 J. Jørgensen, *Træk af Deduktionsteoriens Udvikling i den nyere Tid, Festskrift udgivet af Københavns Universitet i Anledning af Universitetets Aarsfest, November 1937*, Copenhagen: The University of Copenhagen, 1937, pp. 116–117.

24 *Ibid.*, p. 102.

25 R. Carnap, *The Logical Syntax of Language* (1937, German-language edition, Wien 1934), London: Routledge & Kegan Paul, 1959, p.259.

26 J. Jørgensen, "Die logischen Grundlagen der Wissenschaften" in: *Actes du Huitième Congrès International de Philosophie, Prague 2–7 Septembre 1934*, Prag: Orbis, S.A., 1936, pp. 100–116. The lecture was also published in 1935 in Danish with the title

which logical entailment is the relation responsible for their order. Ideally, a science is an axiomatised theory that consists of some improvable basic principles and a number of consequences derived from them. The logical basis for a science therefore consists partly of its basic principles and partly of the applied rules for derivation, all of which are derived from logic and are therefore tautological. If the presupposed basic principles are to say anything about actual reality, they cannot be tautologies, but must be general and verifiable hypotheses about the nature of specific, empirically accessible objects. Human knowledge is therefore either tautological, i.e. *a priori*, or empirical.

At this point in time, Jørgensen's view of the nature of logic coincided with the official stance of logical positivism, i.e. that the formal sciences can be developed independently of empirical knowledge, but say nothing of the existing reality, whereas the real sciences are empirically based and have a real content.²⁷

However, in 1939, at the Fifth International Congress for the Unity of Science, he returned to the view of the nature of logic that he had previously expressed in a more imprecise manner in *Treatise*. The lecture was published two years later.²⁸

The background for Jørgensen's reflections was his view that both logic and mathematics can be considered as languages, and therefore that, just like other languages, they must be seen as empirically existing phenomena and as special types of human behaviour. "Logic and mathematics are thus transformed into empirical sciences about some special features of the psychological phenomena which are commonly called 'thinking'."²⁹ "Thinking" consists of manipulating concepts, and the more we observe, experiment with, talk, listen and read about what our concepts stand for (i.e. their objects), the more complete our concepts become, and the more capable we are of dealing with what they stand for. In order to stabilise thinking, words are introduced, whose meaning is the content of the concepts for which they stand, and which are formed on the basis of perceptions. Again, this means that the meaning of a word cannot in the final instance be learned with the help of verbal explanations and definitions, but only on the basis of direct observation, which is, Jørgensen thought, empiricism's basic principle.

Words form parts of sentences, and sentences function as names for states of affairs. Therefore, it can be said that an entailment exists between two names, N_1 and N_2 – both of which are names of states of affairs – if they are names of one

"Videnskabernes logiske Grundlag" in: *Festskrift tillägnad Axel Herrlin*, Lund: Carl Bloms Boktryckeri, 1935, pp. 20–37.

27 See for example *Wissenschaftliche Weltauffassung der Wiener Kreis*, Wien: Artur Wolf, 1929, pp. 20–24.

28 J. Jørgensen, "Empiricism and Unity of Science", in *The Journal of Unified Science (Erkenntnis)*, Vol. 9, 1941, pp. 181–188; also in: *Danish Yearbook of Philosophy*, Vol. 6, 1969, pp. 108–114. A more complete account of the points of view Jørgensen expressed here is found in his article "Reflexions on Logic and Language", in: *The Journal of Unified Science (Erkenntnis)*, Vol. 8, 1939/40, pp. 218–228.

29 *Danish Yearbook of Philosophy*, Vol. 6, 1969, p. 110.

and the same state of affairs, or if N_2 is the name of part of the state of affairs that N_1 is the name of. However, whether this is the case depends on the actual use of language, and Jørgensen thought that this could only be determined through empirical exploration and analysis of the language used. Accordingly, logic becomes an empirical science. Furthermore, as linguistic behaviour can be explored by scientific methods, logic therefore also becomes a natural science. Thus, Jørgensen abolished the traditional – and, for logical positivism, basic – differentiation between the formal and real sciences. Only once this was done could all the sciences be said to constitute a unity.

There is no doubt that Jørgensen gradually came to consider the idea of unified science to be the most important of logical positivism's theses. He distanced himself from its conception of the nature of logic, and his further development showed that he gradually dropped the central idea that, despite major differences, held the movement's supporters together – i.e. that philosophy is not a set of propositions, but a logical, analytical activity, the object of which is the language of science. For example, in a major textbook on psychology written during World War II,³⁰ Jørgensen attempted to solve the problem of other minds – i.e. the problem of the basis upon which we attribute consciousness to other people – with the help of a psychological and, in particular, developmental psychology analysis, combined with conceptual analysis.

The philosophy of logic, which makes up a significant part of Jørgensen's original contribution to philosophy, is the only area in which it can be proven that discussions within logical positivism had an influence, however short-lived, on his philosophical thinking. The thought of a metaphysics-free scientific philosophy and the thesis of the unity of science – both significant elements of logical positivism – had been an integrated part of Jørgensen's view of philosophy since the 1920s and remained so throughout his life. Jørgensen's support for logical positivism in the 1930s was due to the fact that the philosophers and scientists in the circle agreed with him on these two significant points.

Jørgensen also shared the socialist outlook that characterised several of the Vienna circle members, including Carnap and Neurath. Although never a member of the Danish Communist Party, he supported world communism in word and deed, and was a great admirer of Stalin. However, he was never a dialectical materialist, and was criticised by Danish Communist Party ideologues for his “neopositivism” and subjective idealism.³¹ The nearest he came to a making a concession to Marxism was a noncommittal hint that:

Perhaps the Hegelian–Marxist “dialectic”, which in reality is a continuation of certain observations by Aristotle, contains a vague beginning of a comprehensive expansion of logic.³²

30 J. Jørgensen, *Psykologi paa biologisk grundlag*, Copenhagen: Munksgaard, 1942–1945, revised edition, 1957.

31 See C.H. Koch, *Dansk filosofi i positivismens tidsalder*, op.cit., p.218.

32 J. Jørgensen, *Indledning til logikken og metodelæren*, København: Munksgaard, 1956

A. J. Ayer is therefore completely mistaken when, in his 1959 review of the history of logical positivism and its main points of view, wrote that “[Jørgensen’s] positivism has been modified by an injection of Marxism.”³³

IV

From 1675 until 1971, anybody who intended to sit an exam at a Danish university first had to take an introductory test in philosophy, the *examen philosophicum* – or, as it was called, the “filosofikum”. Since the late 19th century, psychology had made up a significant part of the material for the exam. In addition, elementary classical logic was taught, as were the main features of the history of philosophy since the Renaissance. When at the age of 32, Jørgensen was appointed professor of philosophy at the University of Copenhagen, which in those days was the only university in Denmark, the first thing he did was to completely reform the content of the teaching. The old textbooks were swept away, and during his first year as professor a new textbook was published sheet by sheet as the teaching progressed. In 1927, the whole work was brought together in a volume of almost 600 pages, entitled *Filosofiske Forelæsninge (Philosophical Lectures)*.

Jørgensen opened the volume by defining philosophy as a science that actively deals with as yet unsolved problems regarding nature and human conditions. Greek philosophy originally encompassed all problems of this nature, but the solutions to a number of these problems established starting points for the formation of the special sciences. Sociology was only separated from philosophy relatively recently, followed by psychology and logic. What remains are problems of natural philosophy or metaphysics, ethical and aesthetic problems, epistemological problems corresponding to the philosophical disciplines of natural philosophy, moral philosophy and philosophical aesthetics, and, of course, epistemology itself, which Jørgensen considered to be the basic discipline.

This characterisation of philosophy is traditional. What is more unconventional is the fact that in his lectures Jørgensen supplied the materials that he thought philosophy should deal with. He used more than 400 of the book’s 560 pages to discuss the main characteristics, history and current status of the special sciences – firstly mathematics and logic; then physics, chemistry, biology, psychology, and sociology; and finally cultural sciences such as history, religion, ethics and linguistics. The work concludes with a study of the history of philosophy since the Renaissance and a 35-page chapter on the main problems of philosophy. In this way, Jørgensen’s *Filosofiske Forelæsninger* came to constitute an encyclopedia of the sciences, in which the real sciences’ formal tools (i.e. logic and mathematics),

(1942), p.98.

33 “Editor’s Introduction” in: A.J. Ayer (ed.), *Logical Positivism*, Glencoe, Illinois: The Free Press, 1959, p.7.

were treated first, followed by a review of the distinctive features of the history of the real sciences and their contemporary status.

A considerably reworked but unfinished version of the lectures was published in two parts in 1935 and 1939.³⁴ It lacked a treatment of sociology and the cultural sciences, as well as the history of philosophy section and the closing section about philosophy's problems. The most crucial change from the first version was that the treatment of psychology increased from 87 pages to 237.

Jørgensen's two philosophy colleagues, each of whom was responsible for their part of the introductory course, were mainly interested in psychology, as is evident in the material they covered. The increase in the size of the psychology section in the second edition of *Filosofiske Forelæsninger* should therefore be understood against this background. However, Jørgensen gave up on his attempt to complete the reworking. One reason may possibly have been that, since its publication in 1926, *Filosofiske Forelæsninger* had been repeatedly criticised for being too difficult for the students to understand. Instead, he wrote a major textbook on psychology during the war years, which, along with the logic and methodology sections of *Filosofiske Forelæsninger*, was to constitute his preferred material up until his retirement.³⁵ In his 1964 autobiography he described the psychology textbook as his main philosophical work, adding that this was a fact, which "many readers have probably not discovered."³⁶

Jørgensen's choice of materials for the first edition of *Filosofiske Forelæsninger* implies that philosophy is an analytical activity that cannot actively deal with airy metaphysical constructions, only with scientifically verifiable materials. In his own direct manner, Jørgensen promised his listeners that his course would be "chemically cleansed of any type of 'philosophical' humbug."³⁷ Jørgensen wanted to lecture only on scientific philosophy.

In his systematic account of the philosophical disciplines, Jørgensen had identified metaphysics with philosophy of nature. Traditionally, metaphysics is a speculatively designed account of existence as a whole, of its nature and its general characteristics, such as being. However, Jørgensen asserted that there is no reason to differentiate between existence as a whole and nature as a whole. Everything is nature, and is therefore the object of the real sciences' empirically based exploration. Natural philosophy had thereby taken over metaphysics' traditional role, i.e. forming theories for existence as a whole.

In his philosophical lectures from 1926, Jørgensen was no less critical of traditional metaphysics than were the later logical positivists. On request, in a 1937 letter to Neurath, he recounted the central themes in his introductory lec-

34 J. Jørgensen, *Filosofiske Forelæsninger*, Vol. 1–2, København: Levin and Munksgaard 1935 and 1939.

35 J. Jørgensen, *Psykologi paa biologisk grundlag*, op.cit.; J. Jørgensen, *Indledning til logikken og metodelæren*, op. cit.

36 *Festskrift udgivet af Københavns Universitet 1966*, op.cit., p.146.

37 J. Jørgensen, *Filosofiske Forelæsninger*, 1. ed., op.cit., p.10.

tures. The scientific view of the world, he says, is developed in the lectures as a continually progressing critique of primitive, mystical and speculative concepts and colloquialisms, with due deference to ever more exact and more verifiable experiences through a logical clarification of concepts: “Deshalb ist das ganze Darstellungsweise anti-spekulativ, anti-mystisch, anti-religiös, anti-antropomorphistisch – oder positiv: logisch-rationalistisch (im guten Sinne) empiristisch, naturalistisch, kritisch.”³⁸

According to Jørgensen, the real sciences are unified in the sense that they are all based on experience, and also that the same scientific methods are used throughout. In the German cultural science tradition, Dilthey differentiated sharply between natural sciences on the one hand and cultural sciences on the other. Where the natural sciences use experiments, the cultural sciences are based on empathy, or “Einfühlung”. Where the natural sciences actively deal with recurring phenomena and can therefore posit general regularities, the cultural sciences deal with the unique. However, Jørgensen thought that the difference between both the sciences and their respective subject areas is relative and not absolute. The natural sciences explore natural phenomena, the cultural sciences explore cultural phenomena; the former more usually occur in several instances that resemble one another, while the latter are more individuated and complex, but both types of phenomena are explored empirically. Consequently, the difference between the natural and the cultural sciences is only relative.

The unity of the sciences, as envisaged by Jørgensen, is a methodological unity. As previously mentioned, he attempted, within the frameworks of his empiricism, to unite the formal and the real sciences. The unity he sought did not therefore consist of some kind of reductionism. Jørgensen’s lectures were an encyclopedia of the sciences based on the idea of the methodological unity of science.

Since the early 1930s, Neurath, more than any other German and Austrian logical positivist, had been heavily involved with the idea of such an encyclopedia,³⁹ and as mentioned previously it was decided at the congress in Paris to fund the publication of an *International Encyclopedia of Unified Science*. The work started to materialise in 1938, but never achieved the scope originally envisaged by Neurath, i.e. 26 volumes, consisting of a total of 260 monographs.⁴⁰ Only the first two volumes were published, with the subtitle “Foundations of the Unity of Science”.

Against this background, it was natural that Neurath considered Jørgensen’s lectures to be a type of precursor to his own great project. In a 1938 article, he enthusiastically mentioned Jørgensen’s book from 1926, and ended with the words:

38 Draft of letter of 31 May 1937 from Jørgensen to Neurath, in “Jørgen Jørgensens Papirer”, see note 5.

39 See, for example, McGuinness (ed.), *Unified Science*, op.cit., pp. xviii–xxi and D. Zola, *Reflexive Epistemology. The Philosophical Legacy of Otto Neurath*, Dordrecht/Boston/London: Kluwer, 1989, pp.83–106.

40 McGuinness (ed.), *Unified Science*, op.cit., p. xix.

Jørgensen is a robust empiricist, but he knows also very well the power of ratiocination within the logical framework of theoretical constructions. We may call his attitude [...] “Empirical Rationalism” the counterpart to “A priori Rationalism” [...] The term “Empirical Rationalism” may be used synonymously with the term “Logical Empiricism”. Jørgensen emphasises that all the complicated and most important scientific theorising *starts* with the experience and language of our daily life, that we also have to *test* all the theoretical results of all the sciences by means of the same aids. Jørgensen gives in his lectures not only a program of the Unity of Science but he also shows this Unity as an actuality.⁴¹

In this way, Jørgensen taught students “the grammar of science” by illuminating how the leading scientists discovered and utilised the fundamental ideas and why changes were unavoidable.⁴² In using the expression “the grammar of science”, Neurath had acknowledged his link with Ernst Mach and Karl Pearson.

V

In the group of philosophers and scientists who, despite major differences of opinion, gathered under the banner of “logical positivists” or “logical empiricists”, Jørgensen found the same empirical and anti-metaphysical stance, the same striving after scientific philosophy, and the same view of the unity of science that he himself had espoused in the 1920s following his break with neo-Kantianism. Despite this break, Jørgensen retained some basic features of the Marburger School’s philosophy, i.e. the view of the development of science as a continuous – but necessarily unfinished – pursuit of truth, and that philosophy is philosophy of science. Only on a few points, namely in connection with deliberations about the nature of logic, did his encounter with logical positivism lead to a change of his basic points of view – and these changes were only short-term. There is no doubt that Jørgensen got on exceedingly well with many who gathered under the banner “logical positivists” in the 1930s, but Jørgensen was no more an orthodox logical positivist than were the others he met at the movement’s congresses. Such a thing only ever existed in the minds of the critics.

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41 O. Neurath, “Encyclopaedism as a Pedagogical Aim: A Danish Approach”, op.cit., p. 492.

42 Ibid., p. 487.