Carnap, Esperanto, and Language Engineering[*]

Takaaki Matsui[†]

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Abstract

Carnap has long been interested in two different projects of language engineering, symbolic logic and international auxiliary languages (IALs) such as Esperanto, noting a psychological affinity between them. This paper explores two questions: first, about the relationship between his interests in symbolic logic and IALs, and second, about the implications of considering his engagement with IALs for understanding his philosophy. Through a detailed reconstruction of Carnap's engagement with IALs, using his underdiscussed essay on IALs, "The Problem of a World Language" and his unpublished material from the Virtual Archive of Logical Empiricism (VALEP), I argue, first, that underlying Carnap's interests in the two projects is the idea that natural language is unsuited for some special purposes, which are better served by constructing new special languages; and second, that considering Carnap's views on IALs reveals that his view of language, which certainly has a utopian tendency, has several realistic aspects, such as (1) non-perfectionism, (2) experimentalism, and (3) a recognition of the role of psychological factors in language choice. Additionally, this paper also highlights Carnap's neglected concerns about linguistic injustice suffered by speakers of minor languages and the use of the generic masculine.

[†] matsui.t.m.takaaki@gmail.com

Keywords

1. Introduction

In Section 11 of his intellectual autobiography, entitled "Language Planning," Rudolf Carnap (1891–1970) reports that he has long been interested in language planning or language engineering in two different fields: symbolic logic and international auxiliary languages (IALs) such as Esperanto (Carnap 1963a, 67–71). His interest in IALs goes back much further than his interest in symbolic logic. While he first encountered a system of symbolic logic with Frege at the University of Jena,[1] he was only 14 years old when he first encountered Esperanto. He was immediately fascinated by Esperanto, learned it eagerly, and participated actively in the World Esperanto Congress four times. Not only did he enjoy speaking Esperanto, but he later became interested in theoretical issues related to the construction of IALs. In addition to Esperanto, he studied several other IALs, including *Ido*, a revision of Esperanto promoted by the Leibniz scholar and logician Louis Couturat; *Latino sine flexione*, a simplified Latin invented by the mathematician and logician Giuseppe Peano; and Basic English, a simplified English developed by the linguist and philosopher Charles Ogden.[2]

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[1] Carnap studied at the University of Jena from 1910 to 1914 (Carnap 1963a, 3), attending Frege's courses "Begriffsschrift" in the fall of 1910 and "Begriffsschrift II" in the summer of 1913 (Carnap 1963a, 5). He studied *Principia Mathematica* (1910–13) after World War I in 1919 (Carnap 1963a, 11).

[2] See Aray (2019) for Couturat and *Ido*, Aray (2021) for Peano and *Latino sine flexione*,

Carnap's engagement with Esperanto and other IALs raises at least two questions. The first question concerns the relationship between his interests in IALs and in symbolic logic. While Carnap acknowledges that these two projects have different goals, with different problems and different solutions, he also notes a psychological affinity between them (Carnap 1963a, 67, 71). Both projects, he suggests, must appeal to those who have not only a descriptive or historical interest in language, but also a constructive interest in finding the most suitable form of expression for a given linguistic function (Carnap 1963a, 71). In fact, many people, including Leibniz, Couturat, and Peano, were actively involved in both (Carnap 1963a, 67, 71). How, then, are Carnap's interests in the two projects related to each other, if at all? The second question concerns the implications that considering his engagement with IALs might have for understanding his philosophy. The fact that Carnap devotes an entire section of his intellectual autobiography to language planning seems to suggest its importance for his philosophy. Indeed, as Carus (2007) emphasizes, the idea of "language engineering" (Carnap 1963a, 66) plays a central role in Carnap's philosophy. What new light, if any, is shed on his philosophy if we consider his engagement with IALs?

This paper aims to answer both of these questions through a detailed reconstruction of Carnap's engagement with Esperanto and other IALs, using his underdiscussed essay on IALs, "The Problem of a World Language" (Carnap 1944), which is his only publication devoted to IALs, as well as his unpublished material recently made available online in the Virtual Archive of Logical Empiricism (VALEP).[3] I will answer the first

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and McElvenny (2013; 2018) for Ogden and Basic English.

[3] VALEP (valep.vc.univie.ac.at) is a freely available online archive on the history of logical empiricism, hosted by the University of Vienna (Institute Vienna Circle and Phaidra). Thanks to Ulrich Lins for kindly informing me about the existence of this

question by arguing that underlying Carnap's interests in the two projects is the idea that there are some special purposes for which natural language is not suitable and which are better served by constructing new special languages. Regarding the second question, I will argue that considering Carnap's views on Esperanto and other IALs reveals that his view of language, which certainly has a utopian tendency,[4] has several *realistic* aspects, such as (1) non-perfectionism, (2) experimentalism, and (3) a recognition of the role of psychological factors in language choice. It will also shed light on Carnap's neglected concerns about linguistic injustice suffered by speakers of minor languages and the use of the generic masculine.

While Carnap's engagement with Esperanto and other IALs had long received little attention, several commentators have recently begun to explore it. For example, in his work on Ogden and Basic English, James McElvenny (2013; 2018) uses archival materials to reconstruct the previously neglected exchanges between Ogden, Neurath, and Carnap about Basic English and other IALs.[5] Ulrich Lins (2022), a historian of the Esperanto movement, draws on archival materials, the recently published Carnap diaries, and his extensive expertise in the history of Esperanto and other IALs movements to provide a detailed description of Carnap's engagement with Esperanto and other IALs. Başak Aray (2024), in one of her series of papers on the history of IALs, explores the relationship between Carnap's interest in IALs and his philosophy.

While all of these studies are important contributions to our understanding of

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wonderful archive.

[4] As Carus (2007) argues, there is a utopian tendency throughout Carnap from his youth to his later years.

[5] Neurath worked to develop a picture language, ISOTYPE (International System of Typographic Picture Education) and wrote a textbook on it in Basic English (Neurath 1936). For further information on ISOTYPE, see Burke, Kindel, and Walker (2013).

Carnap's engagement with IALs and its relationship to his philosophy, they have limitations. McElvenny (2013; 2018), despite focusing on Ogden's relationship with Neurath and Carnap on Basic English, does not even mention Carnap's defense of Basic English against a critic in his "The Problem of a World Language" (Carnap 1944). Lins (2022), as an Esperanto scholar, focuses on Carnap the Esperantist and refrains from considering the philosophical implications of his engagement with Esperanto and other IALs (see Lins 2022, 74). Array (2024) comes closest to our interest by exploring the relationship between Carnap's engagement with IALs and his philosophy, but she does not examine "The Problem of a World Language" (Carnap 1944) in detail. Moreover, no one has examined "Additional Comments on the IALA Questionnaire 1946,"[6] a 38-page document that Carnap attached to his response to a list of questionnaires from the International Auxiliary Language Association (IALA) in 1946, which contains several insights.[7] By examining these underdiscussed texts, this paper provides a deeper understanding of Carnap's views on IALs and their philosophical implications.

The structure of this paper is as follows. Section 2 identifies the basic idea that underlies Carnap's interests in both symbolic logic and in IALs. Sections 3 and 4 consider his engagement with symbolic logic and IALs, respectively. Section 5 explores the philosophical implications of his views of IALs.

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[6] This document is stored in the Rudolf Carnap Paper of the Archives of Scientific Philosophy at the University of Pittsburgh and is available on VALEP at https://phaidra.univie.ac.at/o:1522293. It will be referred to as RCP, 095-20.

[7] Lins acknowledges the importance of this document but leaves it unexamined. "Carnap had taken great care in his contribution, answering the IALA's questions about the desirable character of an international auxiliary language in minute detail. At great length he evaluated the pros and cons of certain features of the various language projects. What has been taken up from his suggestions would still have to be studied by interlinguistic specialists" (Lins 2022, 68).

2. Two Forms of Language Engineering

Underlying Carnap's interest in both projects is the Enlightenment ideal.[8] This ideal rejects dogmatical acceptance of the traditional as authoritative, and advocates subjecting it to critical scrutiny and rational reform based on reason and experience. Natural language is no exception to the Enlightenment ideal. Inherited from generation to generation, it has a variety of flaws and often gives rise to problems. Therefore, according to the Enlightenment ideal, we should examine what features of natural language give rise to such problems, and, if necessary, reform it so that such problems do not arise.

Note that Carnap is not committed to the view that natural language should be abandoned. In his view, different languages have "different advantages in different respects" (Carnap 1963a, 68). So the choice among them should be made relative to a given purpose.

> In my view, […] the choice of a certain language structure […] is a practical decision like the choice of an instrument; it depends chiefly upon the purposes for which the instrument—here the language—is intended to be used and upon the properties of the instrument. (Carnap 1947, 43)[9]

If there are some purposes for which natural language is useful enough, then it would be reasonable to continue to use it for those purposes. And natural language, Carnap admits, is indeed very useful for a variety of purposes in everyday life (Carnap 1963b, 938).

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[8] See Carus (2007) for Carnap's commitment to the Enlightenment ideal.
[9] For Carnap's instrumentalist view of language, see Aray (2024), who contrasts it with the Romanticist view of language, which she attributes to Humboldt, Herder, and Wittgenstein.

However, if there are some special purposes for which it is not suitable, then we would be better off constructing new special languages for those purposes. Carnap illustrates his point with the analogy of a pocketknife.

> A natural language is like a crude, primitive pocketknife, very useful for a hundred different purposes. But for certain specific purposes, special tools are more efficient, e.g., chisels, cutting-machines, and finally the microtome. If we find that the pocket knife [*sic*.] is too crude for a given purpose and creates defective products, we shall try to discover the cause of the failure, and then either use the knife more skillfully, or replace it for this special purpose by a more suitable tool, or even invent a new one. [...] would anyone criticize the bacteriologist for using a microtome […]? (Carnap 1963b, 938–39)

In the case of natural language, the special purposes for which it is too crude and produces defective products include, according to Carnap, scientific and philosophical inquiry and international communication. Thus, in his view, it is reasonable to try to serve these purposes better by constructing new special languages for them. Both symbolic language systems and IALs are, according to Carnap, specialized languages constructed for such special purposes.

3. Symbolic Language Systems

To see the affinities between symbolic language systems and IALs in more detail, let us first briefly consider symbolic language systems.[10] For Carnap, logic is in the first place a tool for inference. In the preface to *Formalization of Logic*, he compares logic to

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[10] See Reck (2007) for a more detailed discussion of Carnap's views on logic.

a hammer. "As a hammer helps a man do better and more efficiently what he did before with his unaided hand," so logic "helps a man do better and more efficiently what he did before with his unaided brain, that is, by means of instinctive habits" (Carnap 1943, viii). Aristotle's logic, for example, systematized the activity of deriving conclusions from premises, which people had previously done instinctively, by constructing explicit rules for it. This systematization made it possible to make inferences deliberately and methodically and to examine them critically (Carnap 1943, ix). The development of symbolic logic has further made it possible to make and evaluate inferences more precisely and efficiently than with Aristotelian logic, and it has allowed for various kinds of inferences that could not be made with Aristotelian logic.

For Carnap, symbolic logic is not only a tool for inference, but also for the analysis, rational reconstruction, and explication of concepts and statements in science (see Leitgeb and Carus 2020, Supplement E).[11] He also applies it to the critique of metaphysics. For example, in his famous article "The Elimination of Metaphysics through Logical Analysis" (Carnap 1959), he uses symbolic logic to argue that some alleged statements in metaphysics, while not violating grammatical rules, are meaningless. He calls such statements "pseudo-statements" and argues that their existence is "based on a defect of [natural] language" (Carnap 1959, 69). Natural language allows the construction of grammatical but meaningless sequences of words. The meaninglessness of such word sequences, however, "is not obvious at first glance, because one is easily deceived by the analogy [of such meaningless sequences] with the meaningful sentences" (Carnap 1959, 69). We can avoid such meaningless sequences, Carnap suggests, by constructing "a

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[11] As Richardson (2007, 304) emphasizes, Carnap believed that "his philosophy offers tools to science."

logically correct language" (Carnap 1959, 69).

It is well known that Carnap's acquaintance with different language systems in symbolic logic was one of the main motivations behind his formulation of the principle of tolerance–the principle that we should not prohibit but rather tolerate the free construction of new language forms (Carnap 1937, §17; see also 1950, 40). In his autobiography, he writes:

> when I became acquainted with the entirely different language forms of *Principia Mathematica*, the modal logic of C. I. Lewis, the intuitionistic logic of Brouwer and Heyting, and the typeless systems of Quine and others, did I recognize the infinite variety of possible language forms. On the one hand, I became aware of the problems connected with the finding of language forms suitable for given purposes; on the other hand, I gained the insight that one cannot speak of "the correct language form," because various forms have different advantages in different respects. The latter insight led me to the principle of tolerance. (Carnap 1963a, 68)

Consider, for example, the language systems of classical mathematics and intuitionistic mathematics. While the former is much simpler, the latter is safer from contradiction. Thus, it may be that while it is advisable to use the intuitionistic system as much as possible, the classical system is indispensable for the purposes of physics (Carnap 1963a, 49).[12]

With the above discussion of symbolic language systems in mind, we will examine in the next section how Carnap thinks Esperanto and other IALs better serve a purpose for which natural language is not suitable, and how he thinks the choice between different

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[12] See Carus (2007, ch. 10), Creath (2009), and (Leitgeb and Carus 2020, supplement H) for further discussions of the principle of tolerance.

IALs should be made. I will also highlight some hitherto neglected aspects of his engagement with IALs.

4. Esperanto and Other IALs

Let us now turn to IALs. IALs are languages constructed for the special purpose of facilitating communication between peoples with different native languages.[13] Since the publication of *Volapük* in 1879, the first IAL to gain a wide international linguistic community, various IALs have been constructed. The most famous and successful of these is *Esperanto*, published by Ludwik Lejzer Zamenhof in 1887. Although there is no reliable data on the number of Esperanto speakers (Fiedler and Brosch 2022, 47), the continued interest in it is suggested by the fact that it has become accessible on online platforms such as Duolingo, Wikipedia, Amikumu, and Google Translate.

The young Carnap's interest in Esperanto was evoked by two motives: "the humanitarian ideal of improving the understanding between nations" and "the pleasure of using a language which combined a surprising flexibility in the means of expression with a great simplicity of structure" (Carnap 1963a, 69).[14] With respect to the second motive,

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[13] That IALs are not intended to replace natural languages, but rather to serve as a special tool for the specific purpose of international communication, was emphasized by Wilhelm Ostwald, a Nobel laureate in chemistry and one of the main advocates of Ido. "Admittedly we would not utterly tear down and destroy the old house, for too much of the life of our ancestors is stored inside. But could we not build alongside it a special house for special ends? We could indeed, to speak again without parables, erect next to the native language a general, simple, commercial and scientific language, that could achieve the communication of peoples with each other even incomparably more effectively than the telegraph and railroad" (quoted in Gordin 2015, 134). This reminds us of Carnap's pocketknife metaphor in Carnap (1963b, 938–39) quoted above.

[14] These motives roughly correspond to Esperanto's two often claimed advantages as a tool for international communication: neutrality and simplicity (Van Parijs 2011, 39–46).

he also says that he was fascinated by the regularity of the Esperanto grammar (Carnap 1963a, 69).

Consider the humanitarian ideal first. Carnap was impressed by the humanitarianism embodied by Zamenhof, the creator of Esperanto. In an unpublished part of his autobiography, [15] he recounts his experience of attending the 4th World Esperanto Congress in 1908 as follows:

> I was especially impressed by the address of the founder of Esperanto, Dr. Zamenhof, who in simple sincere words made a strong appeal to humanity to remove the obstacles of language diversities and thereby come to a better mutual understanding. He talked in a modest, unpretentious way, but his deep feeling for the cause to which he devoted his whole life, was impressive and moving. Throughout my life the idea that our work should serve not only our own nation but the whole of humanity has remained one of my guiding ideas (M-A5, N14).

In this context, it is worth noting that Carnap expressed on several occasions his concern about the disadvantages suffered by those who write in minor languages in science. The work on semantics by Stanislaw Lesniewski and Tadeusz Kotarbinski, logicians of the Warsaw School, was published in Polish and thus had very limited chances of being read (Carnap 1942, vi; 1963a, 31). Carnap acknowledges their significant contributions, adding that "this fact, incidentally, confirms once more the urgent need for an international auxiliary language, especially for scientific purposes" (Carnap 1942, vi). This concern of Carnap about what we might call *linguistic injustice* has, to my knowledge, largely been ignored, with the exception of Hempel (1973, 262–63).

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[15] This is stored in the Rudolf Carnap paper at UCLA and is available on VALEP at https://phaidra.univie.ac.at/o:1455912. It will be referred to as M-A5.

Consider the second motive for Carnap's interest in Esperanto, its simplicity and flexibility, and relatedly, its regularity. The grammar of Esperanto is so simple that it can be summarized in only sixteen rules.[16] Parts of speech are marked by characteristic suffixes, so that the function of words can be read from their form alone: nouns end with *-o*, adjectives with *-a*, and derived adverbs with *-e*. Verbs do not change for person or number. Infinitive verbs are marked by *-i*, the present tense by *-as*, the past by *-is*, and the future by *-os*, without exceptions or irregularities, which abound in natural languages, annoying their learners. Esperanto's word formation system allows the derivation of a large number of words by combining a small number of roots with prefixes and suffixes. This greatly reduces the core vocabulary that needs to be learned for communication. When Carnap spoke of Esperanto's simplicity, regularity, and flexibility, he must have had these features in mind.

Later, in the U.S., Carnap studied the "naturalistic" movement in IALs, particularly *Occidental*, invented by Edgar de Wahl (later renamed *Interlingue*) (M-A5, N22–23; see also Aray 2024, 220; Lins 2022, 70).[17] Naturalists believed that IALs should be as close as possible to familiar natural languages, even at the expense of regularity (Large 1985, 132). While Carnap initially rejected Occidental without a detailed study because he found the sacrifice of regularity unacceptable, he later came to recognize some importance in taking into account psychological factors such as naturalness (M-A5,

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[16] The sixteen rules of Esperanto grammar were first presented in *Unua Libro* (*First Book*), published by Zamenhof under the pseudonym Doktoro Esperanto in 1887. These rules have been reproduced many times since then (see, for example, Fiedler and Brosch 2022, 423–25).

[17] Carnap was led to study the naturalistic movement through a conversation with Albert L. Guérard, the author of *A Short History of the International Language Movement* (Guérard 1922). See Lins (2022, 69–70) for Carnap's relationship with Guérard.

N22).[18]

Behind Carnap's recognition of the importance of psychological factors is his own experience of people's emotional opposition to Esperanto.[19] Carnap describes his first meeting with Wittgenstein, who vehemently opposed Esperanto, as follows: "At our very first meeting with Wittgenstein, Schlick unfortunately mentioned that I was interested in the problem of an international language like Esperanto. As I had expected, Wittgenstein was definitely opposed to this idea. But I was surprised by the vehemence of his emotions. A language which had not 'grown organically' seemed to him not only useless but despicable" (Carnap 1963a, 26).[20] Carnap also writes to Ogden: "We see from the facts– or at least it seems very probable–that the much greater number of men are not ready to make use of a not-natural language system; they have even a disgust at such a one." (Carnap to Ogden, February 7, 1934, quoted in McElvenny 2018, 140).

The importance of psychological factors, however, should not be overstated. After acknowledging their importance, Carnap did not abandon the view that regularity is important: "On the other hand, I believe that de Wahl underestimated the importance of regularity" (M-A5, N23; see also Aray 2024, 220). This point becomes clearer if we look

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[18] Carnap writes of de Wahl: "He certainly has the merit of having called the attention of interlinguists for the first time to the psychological factors in this field. I think he is right in his view that a language which is merely constructed according to maximum regularity is not the easiest one to learn if it is not in accord with the thinking and speaking habits of people" (M-A5, N23).

[19] Emotional opposition to Esperanto is not uncommon. See Fiedler and Brosch (2022, 3–4).

[20] In a note from 1946, Wittgenstein writes: "Esperanto. The feeling of disgust we get if we utter an *invented* word with invented derivative syllables. The word is cold, lacking in associations, and yet it plays at being 'language.' A system of purely written signs would not disgust us so much" (Wittgenstein 1998, 60e). Löffler (2004) analyzes this and other relevant remarks on planned languages by Wittgenstein and concludes that "[f]rom an interlinguistic point of view, Wittgenstein's views on planned languages were clearly misguided" (Löffler 2004, 211).

at his "Additional Comments on the IALA Questionnaire 1946" (RCP, 095-20). In this document, Carnap discusses the relationship between naturalness and simplicity or regularity. Naturalness and simplicity are often trade-offs, and the choice between a more natural rule and a simpler rule, according to Carnap, will "depend upon the relative weight given to naturalness or simplicity" (RCP, 095-20-7). While Carnap finds both rules acceptable, he adds that "simplicity and regularity seem to me most important" (RCP, 095-20-7). Carnap emphasizes the importance of regularity and simplicity not because he is obsessed with them, but for a humanitarian reason: "many nations outside of the Western world, especially in Eastern Europe and Asia, will play a more prominent role in the future" (RCP, 095-20-7). Later in the same document, Carnap opposes the introduction of irregular forms that deviate significantly from the normal forms into an IAL: "alternative forms deviating considerably from the normal forms should be introduced only if they serve for a distinct functional purpose. Irregular forms without a special function are not only superfluous but constitute a disturbing factor" (RCP, 095-20-34). It is clear from this that Carnap believed that for the purposes of IALs, the introduction of irregularities should be avoided as much as possible.

It is worth noting that in the same document, Carnap also opposes the generic masculine.

> a clear distinction by the use of three different words for "human being," "male human being," and "female human being" (whether by the simple forms HOME, HOMO, HOMA, as in Novial, or by any other suitable forms) is definitely preferable to the use of the same word HOME for the two first meaning […]. I think […] that ambiguities of the kind just mentioned and similar ones, although common to the majority of the control languages, should be recognized as traces of the old

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"maskulismo" (Beaufront) and should under no condition be tolerated in an IAL. (RCP, 095-20-9)

It cannot be overemphasized that Carnap, the proponent of the principle of tolerance, does not tolerate the generic masculine in IALs under any circumstances.[21]

Let us now turn to "The Problem of a World Language" (Carnap 1944), his only publication devoted to IALs. This essay was written in response to Delattre (1944)'s critique of Basic English. Though short, this essay contains several important insights into the issue of choice among IALs and deserves a detailed analysis.

Basic English (*British American Scientific International and Commercial English*) is a simplification of English with only 850 core words, invented and promoted by Ogden.[22] Delattre points out some serious disadvantages of Basic English: the irregular spelling, the difficulties in pronunciation, the use of many figurative and idiomatic phrases due to the limited vocabulary, the irregularity of the tonic accent (stress), and so on.[23] Carnap acknowledges that Delattre is right in all these points. At the same time, however, he argues that Delattre "does not even touch the decisive point of the problem raised by Basic English" (Carnap 1944, 303). According to Carnap, we need a tool for international communication, and this need will become even more urgent in the future. Given this need, the question is not whether there are any disadvantages to Basic English.

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[21] This would be good news for Yap (2010), who argues that some of Carnap's ideas can serve as a resource for feminism.

[22] In a letter to Neurath, Carnap appreciates the principle of word economy of Basic English (Carnap to Neurath, October 7, 1944, Neurath and Carnap 2019, 625).

[23] In addition to pointing out some serious disadvantages of Basic English, Delattre also raises the issue that the use of Basic English as an international language unfairly advantages native English speakers and disadvantages non-natives, but Carnap ignores this point. This indicates that his concern about linguistic injustice is limited.

The question is whether Basic English is the best possible solution. If so, it will be used as international language in spite of all its disadvantages. Man [*sic*.] never has perfect tools. He [*sic*.] uses the relatively best available. (Carnap 1944, 303)

To examine whether Basic English is the best solution, its advantages and disadvantages must be compared with those of the other available alternatives.

To assess the relative advantages and disadvantages of Basic English, Carnap broadly distinguishes between two types of IALs: one is a simplified version of a natural language, such as Basic English, and the other is an artificial language, such as Esperanto. While the former has "the great practical advantage of being immediately understandable to millions of people," the latter has "the advantage of a much greater simplicity and regularity" (Carnap 1944, 303). Which is the better solution, then? Here is Carnap's answer: "nobody knows today whether it will be a basic language or an artificial one. Therefore, both ways must be tried out" (Carnap 1944, 303). While his answer is blunt, it makes an important point: since language choice involves complex factors, and it is often impossible to determine from an armchair which language is better, we must try to use it and see its effectiveness. Carnap concludes this essay, after briefly making some additional comments on Basic English and *Interglossa*, with the following suggestion: "A good deal of further work must be done in this field. Criticism of existing projects is not enough—constructive proposals for improvement are required" (Carnap 1944, 304). We will return to the importance of trial in language choice and explore its philosophical implications in the next section.

Before exploring the philosophical implications of these considerations about IALs in the next section, let us summarize the relationship between symbolic logic and IALs for Carnap. First, while both symbolic language systems and IALs are special tools

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constructed for special purposes for which natural language is not suitable, they serve different purposes: symbolic language systems are tools for inference, for the analysis, rational reconstruction, and explication of concepts and statements in science, and for the critique of metaphysics; and IALs are tools for international communication.

Second, Carnap is tolerant of both the construction of different symbolic logic systems and the construction of different IALs. As we have seen, his acquaintance with different symbolic language systems was a key motivation for his principle of tolerance. And he recommended trying out both simplified natural languages like Basic English and artificial languages like Esperanto. It is also worth noting that in the midst of the heated sectarian debates among the proponents of different IALs, Carnap preferred to seek common ground rather than take sides with any particular IAL (Carnap 1963a, 70).[24] It should also be noted, however, that Carnap does not say that anything goes. As we have seen, he strongly opposed the use of generic masculine in IALs.

Third, and finally, it is also worth noting that Carnap's interest in symbolic logic and his interest in IAL were not parallel but rather sometimes intersected. He used his expertise in logic to examine the logical properties of IALs. In a letter to Neurath dated October 7, 1944, he writes of Interglossa invented by Hogben:

> his treatment of 'all', 'every', 'any', 'some' etc. is not satisfactory. The examples of translations which he gives at the end deviate in many points considerably from the original; thus a retranslation into English would lead to quite different texts. Tests of this kind made with earlier languages (e.g. Esperanto and Ido) had much better results. (Neurath and Carnap 2019, 626)[25]

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[24] He writes to Ogden: "I can speak Esperanto, but am not dogmatically attached to this system" (Carnap to Ogden, 7 December 1933, quoted in McElvenny 2018, 136).
[25] If Hempel remembers correctly, Carnap wrote to Hogben about this. "In speaking with

Carnap concludes the section on language planning of his autobiography with the hope that if some symbolic logicians besides Peano and Couturat direct their thoughts to the problem of planning an IAL, it might yield fruitful results. (Carnap 1963a, 71). It is interesting to imagine what would have happened if Carnap had devoted more effort to this problem.

5. Philosophical Implications of Carnap's Engagement with IALs

What does the above discussion of Carnap's views on Esperanto and other IALs bring to our understanding of Carnap's philosophy? I argue that it sheds new light on Carnap's view of language. While his view of language certainly has a utopian tendency, our discussion reveals that it has several realistic aspects, such as (1) non-perfectionism, (2) experimentalism, and (3) the recognition of the role of psychological factors in language choice.

5.1 Non-perfectionism

Recall that in response to Delattre's criticism of the shortcomings of Basic English, Carnap argued that the question is not whether Basic English is perfect, but whether it is a better solution to the problem of the need for an international language than the other

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Carnap about the subject [IALs], one had the impression that he had examined virtually all of the auxiliary languages that have been proposed since Esperanto, and it was fascinating to hear him compare their strengths and weaknesses. In a conversation about one such language—I believe it was Lancelot Hogben's Interglossa—Carnap once told me that after examining it, he had written the inventor, pointing out what he considered its more important merits and defects; then he added, as an afterthought, that he had written his letter in that language, to get some practice" (Hempel 1973, 263).

alternatives. As he wrote, "Man never has perfect tools. He uses the relatively best available" (Carnap 1944, 303).[26] This indicates that Carnap, while seeking better tools, was not pursuing an unattainable, perfect, ideal language. For Carnap, if a language is good enough as a solution to a given problem and is better than the other available alternatives, then we should use it "in spite of all its disadvantages" (Carnap 1944, 303).

This non-perfectionism can also be found in some of his philosophical writings, especially, in his discussion of explication. Explication focuses not on a language as a whole, but on its parts, concepts, aiming to make them more exact. "The task of *explication* consists in transforming a given more or less inexact concept into an exact one or, rather, in replacing the first by the second" (Carnap 1950b, 3). Carnap calls a given more or less inexact concept an *explicandum*, and a more exact concept that is to replace it an *explicatum*. He lists four requirements for an adequate explicatum: (1) similarity to the explicandum, (2) exactness, (3) fruitfulness, and (4) simplicity (Carnap 1950b, 5–8).[27] What is important for our purposes is that these requirements, according to Carnap, need only be satisfied *to a sufficient degree*: "If a concept is given as explicandum, the task consists in finding another concept as its explicatum which fulfills the [four] requirements to a sufficient degree" (Carnap 1950b, 7).[28] Of course, the question remains as to what constitutes a sufficient degree. However, given that explication is a purpose-relative enterprise (Brun 2016, 1218), it is reasonable to assume that the degree to which an explicatum must satisfy the four requirements depends on the purpose of the explication

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[26] As the reader may notice, Carnap is using 'man' as a generic masculine here, which he said cannot be tolerated in an IAL (RCP, 095-20-9).
[27] For further discussions of explication, see Brun (2016), Carus (2007, ch. 11), Justus (2012), Kitcher (2008), Leitgeb and Carus (2020, supplement D), Pinder (2017), and the essays collected in Wagner (2012).
[28] Pinder (2017, 445) also notes this point.

in question. If an explicatum satisfies the requirements to a sufficient degree for a given purpose, it would be a good explicatum.

5.2 Experimentalism

Recall Carnap's answer to the question of which is the better solution to the problem of the need for an international language: a simplification of a natural language such as Basic English or an artificial language such as Esperanto. His answer was that since no one knows which is better, both must be tried. Although bluntly stated, there is an important insight here: since language choice involves a complex set of factors, it is often impossible to decide from an armchair which language is the best solution to a given problem. What looked great at first glance might not work at all in practice, and what looked useless at first might turn out to be surprisingly useful when one tries it. To determine whether a given language will work or not, one must actually try it and see what happens. In his autobiography, Carnap complains about those who oppose Esperanto without trying it: most of "those who assert that an international auxiliary language [...] could not possibly serve as an adequate means of communication in personal affairs, for discussions in the social sciences and the humanities, let alone for fiction or drama [...] have no practical experience with such a language" (Carnap 1963a, 69).[29] Let us call this aspect of Carnap's view of language choice that emphasizes the importance of trial *experimentalism*.

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[29] At the 4th World Esperanto Congress in Dresden in 1908, Carnap was deeply impressed by the performance of Goethe's *Iphigenie* in an Esperanto translation. And after the 14th World Esperanto Congress in Helsinki in 1922, Carnap traveled for four weeks with a Bulgarian student he had met there, exploring Finland, Estonia, Latvia, and Lithuania while communicating exclusively in Esperanto (Carnap 1963a, 69).

Experimentalism in language choice can also be found in some of his philosophical writings. First, the importance of testing is suggested in several places. For example, in "Empiricism, Semantics, and Ontology," he writes:

> The acceptance or rejection of abstract linguistic forms, just as the acceptance or rejection of any other linguistic forms in any branch of science, will finally be decided by their efficiency as instruments [...] To decree dogmatic prohibitions of certain linguistic forms *instead of testing them by their success or failure in practical use*, is worse than futile; it is positively harmful because it may obstruct scientific progress. (Carnap 1950a, 40, my emphasis; see also 1987, 458)

More importantly, in a footnote to the same article, Carnap explicitly acknowledges the importance of an "experimental spirit." Agreeing with Quine that "the obvious counsel is tolerance and an experimental spirit" (Quine 1948, 38), Carnap writes:

> With respect to the basic attitude to take in choosing a language form (an "ontology" in Quine's terminology, which seems to me misleading), there appears now to be agreement between us [Carnap and Quine]: "the obvious counsel is tolerance and an experimental spirit" (Quine 1948, 38). (Carnap 1950a, 32n5)[30]

This experimentalism in language choice fits well with the spirit of "scientific humanism" that he shared with other members of the Vienna Circle, according to which "science must

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[30] And Carnap believed that in order to settle the dispute between him and Quine, both of their programs had to be pursued to see what would happen. According to Howard Stein, when Quine presented a paper on ontology at the University of Chicago in 1951, Carnap replied along the following lines: "In my view, both programs—mine of formalized languages, Quine's of a more free flowing and casual use of language—ought to be pursued; and I think that if Quine and I could live, say, for two hundred years, it would be possible at the end of that time for us to agree on which of the two programs had proved more successful" (Stein 1992, 279).

be regarded as one of the most valuable instruments for the improvement of life" (Carnap 1963a, 83). Experimenting with a language is not just a matter of creating a new language on a whim and trying it out. Rather, it involves creating a new language based on a certain hypothesis, testing it to see if it works, examining the results obtained, and making further improvements.

5.3 The recognition of the role of psychological factors in language choice

Finally, let us recall that Carnap, in studying the "naturalistic" movement in IALs, came to recognize the role, though limited, of psychological factors in language choice. A reference to psychological factors can also be found in his later philosophical writings.[31] Here is the full version of the first half of the passage from "Empiricism, Semantics, and Ontology," quoted with some omissions above.

> The acceptance or rejection of abstract linguistic forms, just as the acceptance or rejection of any other linguistic forms in any branch of science, will finally be decided by their efficiency as instruments, *the ratio of the results achieved to the amount and complexity of the efforts required*. (Carnap 1950a, 40, my emphasis)

Here, the efficiency of a linguistic form as an instrument is rephrased as "the ratio of the results achieved to the amount and complexity of the efforts required." This implies that if an instrument that promises excellent results once mastered requires an immense amount and complexity of effort that it cannot be mastered, then it is not an efficient

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[31] Psychological factors are not mentioned in the discussion of the principle of tolerance in *The Logical Syntax of Language* (Carnap 1937, Foreword and §17). According to Bohnert (1975, 196), Carnap discussed in classroom how languages come to be learned by children. Thanks to Benjamin Marschall for drawing my attention to Bohnert.

instrument.

The role of psychological factors in language choice has also been recognized in recent discussions of Carnapian explication and conceptual engineering. Pinder (2017) suggests that whether an explicatum is adopted by the relevant community can be tested through experimental philosophy. Similarly, Fischer (2020) and Machery (2021) suggest that the feasibility of implementing a newly engineered concept should be tested through experimental philosophy. These recent proposals could be seen as an explicit development of an idea that was only implicit in Carnap's philosophical work and only visible if we take into account his views on IALs. However, the importance of psychological factors should not be overstated. For Carnap, the efficiency of an explicatum is a matter of "the ratio of the results achieved to the amount and complexity of the efforts required." No matter how likely a concept is to be adopted, if the results achieved by using it are insignificant, it would not be an efficient concept.[32]

6. Conclusion

In this paper, I have addressed two questions, first, the question about the relationship between Carnap's interests in symbolic logic and IALs and, second, the question about the implications of considering his engagement with IALs for understanding his philosophy. I have argued, first, that underlying his interests in both projects is the idea that which natural language is not suitable for some special purposes,

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[32] Pinder even suggests that the adoption (uptake) of a concept (or its likelihood) is one of the criteria for the *fruitfulness* of that concept, but here I agree with Koch (2019), who argues that Pinder conflates theoretical and practical conditions for the success of explications, i.e., fruitfulness and uptake.

which are better served by constructing new special languages; and second, that considering Carnap's views on IALs reveals that his view of language, which certainly has a utopian tendency, has several *realistic* aspects, such as (1) non-perfectionism, (2) experimentalism, and (3) a recognition of the role of psychological factors in language choice.

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