

Quine and Loglan: the Influence of Philosophical Ideas on the Creation of a Logical Language

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Abstract

In the 1950s, James Cooke Brown created an artificial language, in an attempt to use this language to test the Sapir-Whorf hypothesis. The language was called Loglan, short for 'logical language'. The Sapir-Whorf hypothesis expresses, roughly, that the language one speaks influences the way one thinks. Brown's idea was that if language indeed influences thought, it could be determined that speakers of Loglan would think more logically than speakers of for instance English or Dutch. Such considerations do not yet tell us, however, how one should construct a language significantly more logical than the natural languages we use in everyday life. Brown writes that he was heavily inspired by W.V.O. Quine, among others, in the creation of Loglan. Quine's philosophy of language guided him, he says, in forming the structure of his artificial language. In this thesis, I will answer the question to what extent Quine's philosophy of language is in agreement with Brown's goals and methods. Using both a historical analysis and a systematic approach, I will argue that Brown has adopted many of the same solutions to problems of ambiguity that Quine has. At the same time, I maintain, analysis of Quine's more general philosophy of language actually suggests that Quine would be opposed to the use of an artificial language as a means to test the Sapir-Whorf hypothesis. My thesis is thus a case study of how philosophical ideas can form an incentive to building artificial languages, and also an exposition of how such ideas can be adapted and revised once they are implemented.

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Introduction

In everyday language it very frequently happens that the same word has different modes of signification—and so belongs to different symbols—or that two words that have different modes of signification are employed in propositions in what is superficially the same way. [...]

In this way the most fundamental confusions are easily produced (the whole of philosophy is full of them).

In order to avoid such errors we must make use of a sign-language that excludes them by not using the same sign for different symbols and by not using in a superficially similar way signs that have different modes of signification: that is to say, a sign-language that is governed by logical grammar—by logical syntax.

Ludwig Wittgenstein, *Tractatus Logico-Philosophicus*

In the history of philosophy, we can speak of two linguistic turns: periods in which the ideas about language and the role it plays within philosophy fundamentally changed. In both linguistic turns, which took place in the seventeenth century and in the twentieth century, many philosophers were occupied with the idea that natural languages are not suitable for proper philosophy and science. In the twentieth century, philosophers associated with what we have come to call 'The linguistic turn' were especially interested in this idea. Wittgenstein famously said that language 'bewitches' us.¹ The occupation with the idea that language restricts our thinking, of course, goes back even further than the seventeenth century.² It is telling, however, that [Losonsky, 2006] characterises the seventeenth century philosophy as follows:

While traditional logic was indeed in decline, logic itself was being transformed into modern mathematical logic. Moreover, the turn away from formal logic was also a dramatic turn to natural language for insight and solutions to the problems of philosophy. These two turns, the mathematical and linguistic turns of early modern philosophy, are defining features of seventeenth-century European philosophy.³

Philosophers in the seventeenth century, such as Leibniz, Hobbes, and Bacon, had concerns similar to those of twentieth-century philosophers, such as Wittgenstein,

¹"Philosophy is a battle against the bewitchment of our intelligence by means of language." [Wittgenstein, 1953], §109.

²[Losonsky, 2006], p. 182; [Copenhaver and Schmitt, 1992], p. 351.

³[Losonsky, 2006], p. 170.

Carnap, and Ryle, to name a few. Philosophers both in the seventeenth and the twentieth century had the tendency to see language as responsible for creating philosophical problems. Granted, the seventeenth century philosophers had a much broader conception of what philosophy was.⁴ Still, they too believed that even those issues that were not related to philosophy of language or logic per se could be solved, if we could only clarify our use of language.⁵

The creation of artificial languages (sometimes called ‘universal characters’ or ‘philosophical languages’⁶) followed from this tendency. Unless otherwise stated, in the course of this thesis I will define ‘artificial language’ to be any language (in the broadest sense of the word) that is entirely constructed by one person or a group of people, rather than being evolved naturally (unless otherwise stated). Thus I consider Esperanto, Klingon, the *Begriffsschrift* and Loglan all as artificial languages, but not English, Basque-Icelandic pidgin or Haitian Creole. Some of these artificial languages were created in order to compensate for the ‘bewitchment’ by language, in an attempt to counter its (negative) influence. Such constructed philosophical languages had the advantage over natural languages of being designed by humans, rather than being a process of cultural evolution. It was thought that constructed languages would therefore be better suited for doing philosophy than natural languages. Many languages have been created in this spirit, for example Leibniz’s *Universal Characteristic*, Wilkins’s *Philosophical Language* and Dalgarno’s *The Art of Signs*.

In the 1950s, a little after the period that is usually associated with the twentieth century linguistic turn, a sociologist named James Cooke Brown created an artificial language. This language, which he called *Loglan*, was created for much the same reason that people like Carnap and Leibniz were interested in creating languages: to — potentially— improve our logical thinking. Brown did not aim at solving strictly philosophical problems, however; he set out to use Loglan to test the Sapir-Whorf hypothesis. In effect, Brown wanted to see whether a language significantly ‘more logical’ than for example English, could make our thinking more logical. By ‘more logical’, Brown meant less ambiguous (in the sense of having multiple interpretations) than natural languages. He also meant that in Loglan, one could with greater ease and fewer errors transform “sentences into other sentences in such a way that if the first are true so also are the second.”⁷ Brown intended to reach this goal by basing the grammatical structure of Loglan on first-order predicate logic.

Loglan was not the only twentieth-century artificial language meant to function as a conversational language to have been based on or inspired by logic. Other examples include Ithkuil⁸ and Guaspi.⁹ Loglan, however, was one of the most elaborate, with the exception, perhaps, of the derivative language Lojban.¹⁰ There have been other logical languages, but these have been intended as a formal deductive system, not to be used in everyday conversations. Loglan is an especially interesting case, because

⁴[Rutherford, 2006], p. 3: “In most cases one finds no sharp line dividing philosophical debates concerning, for example, the nature of matter or freedom of the will, and related debates in physics and theology.”

⁵[Losonsky, 2006], pp. 182–194.

⁶[Losonsky, 2006], p. 180; [Maat, 1999], p. 1.

⁷[Brown, 1989], p. 22.

⁸[Foer, 2012].

⁹<http://jfcarter.net/~jmc/guaspi/acmpaper.html>

¹⁰[Okrent, 2009], p. 240, “The size of Lojban grew rapidly, after the split [from Loglan].”

Brown explicitly refers to his 'intellectual ancestors' like Leibniz, Carnap, and above all Quine.¹¹

In this thesis, I will take Loglan as an illustration to show how artificial languages are the result of philosophical thoughts that govern their times. More specifically, I investigate the influence of the philosopher Willard Van Orman Quine on the creation and development of Loglan. I will focus on the relationship between Loglan and Quine because Brown names Quine quite explicitly as a major source of inspiration. It is worth citing a passage from the Foreword in full:

Quine's work, more than any other, presented both confirmation and challenge to me. The publication of *Word and Object* in 1960 was an epochal event in the development of Loglan. Page after page seemed to have been designed to provoke, counsel and console anyone who would build a logical language which was at the same time to be ontologically sound. Most of his insights, happily, were confirmatory; others were easily incorporated into what had been the structure of Loglan. A few remained linguistically indigestible, but these evoked, by opposition, some of the more novel ontological features of the language.¹²

Brown thus intended to incorporate as much of Quine's theory as he could. Quine in turn wrote a favourable letter about Loglan to a colleague. Brown used part of this letter for applications for funding, and published it on the back cover of his book:¹³

I am impressed with Loglan. Linguistically, logically, and philosophically it is very sophisticated. Its most conspicuous feature, and a laudable one, is the primacy accorded to the category of predicates. No copula remains, nor any distinction between verb, adjective, and common noun. This line is . . . strongly indicated by modern logic, but hitherto neglected by the International Auxiliary Language fraternity.¹⁴

I will show in this thesis that in the construction of Loglan, Brown has adopted many of the same solutions to problems of ambiguity that Quine has. It remains to be seen, however, whether Brown fully understood Quine's philosophy of language. I will argue, moreover, that Brown has not succeeded in the goals he set for his language, in two major ways. Firstly, even if we accept Brown's assumptions, his formulations of the goals of Loglan are too vague to be of use. Secondly, although Quine did endorse Loglan, it would not be in line with his philosophical views to believe that Loglan could function as a tool to increase logical thinking. I argue that the difference between Quine's philosophy of language and the building principles of Loglan is to some extent similar to the difference between the philosophies of Quine and Carnap.

The thesis is structured as follows. First, in Chapter 1, I will address the idea of using an artificial language as a philosophical tool. I will more specifically consider

¹¹See [Brown, 1989], pp. 8–9, for the latter two; see [Brown, 1960], pp. 53–6 for Leibniz.

¹²[Brown, 1989], pp. 8–9.

¹³[Brown, 1989], p. 16.

¹⁴Supplement to a letter from Brown to Quine, undated (Appendix A.1). Adapted from Quine's letter to Arensberg (Appendix A.3).

Loglan as a tool for testing the Sapir-Whorf hypothesis and briefly discuss other purposes for Loglan. In Chapter 2, I introduce some basic properties of Loglan and explain its grammatical structure. After that, I will discuss some of the criticism that was raised against Loglan as a philosophical tool, and articulate some criticism of my own. Subsequently, in Chapter 3, I will explain how Quine and Carnap relate on the subject of language, and more specifically artificial languages. This will give us some helpful background knowledge and pave the way for the discussion of Quine's influence on Loglan, in Chapter 4. In that final chapter, Quine and Brown are compared from three different perspectives. First we look at the correspondence between Brown and Quine. Secondly, we examine the references to Quine that can be found in various places in Brown's writings. Lastly, we investigate to what extent Quine's philosophy of language is in agreement with Loglan's goals and methods.

Some Preliminary Remarks

An issue with doing research on Loglan is that there are not many academic sources on this language. We have, of course, the many writings by Brown himself, although only one paper has been published in a scientific journal.¹⁵ Soon after publication of this article, Brown retreated from academia to work on Loglan full-time.¹⁶ In 1966, Brown issued a self-published preprint edition¹⁷ of *Loglan: A Logical Language*, in which he set out the characteristics and merits of Loglan. Later, other editions¹⁸ were published, the most recent of which is [Brown, 1989]. These later editions were named *Loglan 1*, indicating that they are part of a series of other books on the language: a book on the construction of Loglan, called *Loglan 2*,¹⁹ a booklet written to teach Loglan: *Loglan 3*,²⁰ and an English-Loglan/Loglan-English dictionary, referred to as *Loglan 4 & 5*, all published by the Loglan Institute.²¹ Brown has also written articles for the (likewise self-published) magazine *The Loglanist*, but these are mainly detailed articles about the construction of Loglan rather than philosophical articles, and I will not discuss them here.

Four reviews of Brown's writings have appeared in peer-reviewed journals. The most extensive criticism is due to [Zwicky, 1969], who reviews the 1966 preprint edition. [Freudenthal, 1968] also reviews the 1966 preprint edition, whereas [Dillon, 1979] reviews the third edition from 1975, which was greatly expanded, although a lot of the formulations remain the same.²² Lastly, [Smith, 1991] reviews the 1989 edition, but as he mostly gives a summary and no criticism, I will not discuss his review.

Besides these published criticisms, we can also draw on the correspondence between Quine and both James Cooke Brown and the Loglan Institute.²³ The letter from Quine to Prof. Arensberg is also used.²⁴

In this thesis, I will always refer to [Brown, 1989], unless I refer to a specific edition of Loglan 1 or treating the reviews by Zwicky, Freudenthal and Dillon.

Dates in correspondence letters are given in dd-mm-yyyy.

¹⁵This is the 1960 paper 'Loglan', published in the *Scientific American*. See [Brown, 1960].

¹⁶[Okrent, 2009], p. 213.

¹⁷[Brown, 1966].

¹⁸Namely [Brown, 1969], [Brown, 1975] and [Brown, 1989].

¹⁹[Brown, 1970].

²⁰[Brown and Brown, 1965].

²¹[Brown and Brown, 1989].

²²See 'Preface to the third edition', [Brown, 1975].

²³[Quine, nd], MS Am 2587 I-154 and 651.

²⁴*Ibid.*, MS Am 2587 I-41.

Chapter 1

An Artificial Language as a Philosophical Tool

Men associate by means of discourse; but words are imposed at the will of the vulgar: and so a bad and foolish imposition of words besieges the intellect in strange ways. [...] Words clearly put a force on the intellect, disturb everything, and lead men on to empty and innumerable controversies and fictions.

Francis Bacon, *The Novum Organon*

In the winter of 1955, James Cooke Brown “sat down before a bright fire,” he wrote, “to commence what I hoped would be a short paper on the possibility of testing the social psychological implications of the Sapir-Whorf hypothesis.”¹ The Sapir-Whorf hypothesis states, roughly, that the language one speaks influences the way one thinks about reality.² Brown’s idea did not remain limited to a short paper: ultimately, Brown published five books. The test for the Sapir-Whorf hypothesis that Brown had in mind made use of a constructed ‘model language’.³ He named this language *Loglan*, short for ‘logical language’. His idea was that if one based a language on logic, ambiguity would be avoided and logical thinking might be made easier. He even claimed that Loglan is “nothing but a linguistic extension of symbolic logic,”⁴ although he changed his mind later, saying that Loglan was *not* meant as a deductive system.⁵ Brown argued that because this language would be very logical yet still a language suitable for use in everyday conversations, speakers of Loglan could be compared to speakers of natural

¹[Brown, 1989], p. 8.

²[Lucy, 2001], p. 903.

³[Brown, 1989], p. 8.

⁴[Brown, 1960], p. 58.

⁵“We might have meant to convey by [the claim that Loglan is logical] the much stronger claim that Loglan is a deductive system, in the sense that geometry and formal logic are. To support such a claim we would have had to show that Loglan had a set of elementary notions and elementary operations from which all its complex notions and complex operations had been rigorously derived. But we do not make this claim. Derivation in Loglan, as in the natural tongues, is by metaphor, not by formal definition.” [Brown, 1989], p. 23.

languages, and hence prove or disprove the Sapir-Whorf hypothesis. If language really influences our thought, he believed, then speaking a logical language should make our thought more logical too.

Unfortunately for Brown, Loglan never came to a stage where it was ready for testing.⁶ Current director of the Loglan institute, Randall Holmes, has estimated there now might be less than 10 speakers of Loglan.⁷ Moreover, almost as soon as Loglan had been published, a group of ‘Loglanists’ decided to create a new language based on Loglan, due to differences of opinion with Brown. They developed the language ‘Lojban’ (a compound word made from ‘logji’ and ‘bangu’, Lojban for ‘logic’ and ‘language’).

In this chapter, we will focus on Loglan as a philosophical and linguistic tool (and not, say, as an international auxiliary language). In order to give the idea of using language as a tool some context, we will first briefly consider how some artificial languages were used as philosophical tools in history. After that, we discuss the idea of Loglan as a test-case for the Sapir-Whorf hypothesis in more detail. Finally, we will look at a few other purposes for Loglan.

1.1 A language as a philosophical tool

We can make a division between artificial languages on the basis of what function they have. For example, some languages were used as a means for improving international communication (e.g. Esperanto, Volapük, Basic English). Other languages had an aesthetic function, serving in movies and literature (e.g. Klingon, Quenya). Some artificial languages also have a philosophical function. This approach got hold especially in the seventeenth century, when many philosophers were occupied with studying natural language.⁸ They were dissatisfied with ordinary language, as the quote from Bacon at the beginning of this chapter exemplifies.

Some made (or endeavoured to make) a language that would improve science, by mirroring the ‘structure of nature’ more exactly. If we could only expose this structure, it was thought, we would be able to get closer to truth.⁹ The idea was that if we could see from the structure of a word, or sentence, what was going on in the world, we would be able to think more clearly, and avoid misunderstandings. This could be done by explicitly showing us, in the language itself, how objects are related. This idea is implemented, for example, in Leibniz’s *Universal Characteristic*. In Leibniz’s language, a

⁶Riner reports that there was a point during the 70s in which Loglan was tested informally, but because of the informal nature and limited scope of this test, it cannot be used as a basis from which to draw conclusions about the Sapir-Whorf hypothesis. See [Riner, 1990], p. 276-7.

⁷“I think that very few people are actually involved with Loglan now. It might be no more than ten, I am not certain.” Private correspondence, 15-11-2017. At its peak, after the publication of the article in the *Scientific American*, Loglan had “around a hundred” volunteers. ([Okrent, 2009], p. 220.) Note that nowadays there are many more speakers of Lojban, the language derived from and related to Loglan. (“The general-purpose Lojban mailing list, which covers anything else related to Lojban, was founded in 1989, and has about 500 subscribers.” from <https://mw.lojban.org/papri/Lojban>.)

⁸[Losonsky, 2006], “The turn away from formal logic was also a dramatic turn to natural language for insight and solutions to the problems of philosophy. These two turns, the mathematical and linguistic turns of early modern philosophy, are defining features of seventeenth-century European philosophy.” p. 170.

⁹See [Leibniz, 1976], p. 184.

distinction is made between simple terms and complex terms. The simple terms combine, like building blocks, to make complex terms. The simple terms for ‘rational’ and ‘animal’ could be combined to create a word for ‘man’, since ‘man’ was defined as being a rational animal. Recognising how complex concepts are related to simple ones would help us understand nature, and therefore promote philosophy, believed Leibniz.

Loglan was also created as a tool. This time not as a tool for explicating the structure of nature, but as a test case for the Sapir-Whorf hypothesis. This goal is, according to Brown, not very far removed from what Leibniz and his contemporaries attempted to do. He even calls the Sapir-Whorf hypothesis the ‘Leibniz-Whorf hypothesis’, on occasion,¹⁰ and brings the theories of Leibniz and Whorf together explicitly:

The central notion underlying Leibniz’s vision may be stated in a question. Is it true that the “rational power” of the human animal is in any significant measure determined by the formal properties of the linguistic game it has been taught to play? A whole school of anthropologically oriented linguists, following the late Benjamin Lee Whorf of Hartford, Conn., believe they have found compelling evidence that the answer to this question is yes.¹¹

The programme of Loglan, then, is mainly to provide a tool—an empirical test—for the thesis that language influences, or determines, the way we view the world around us.

1.2 Loglan and the Sapir-Whorf hypothesis

The Sapir-Whorf hypothesis is named after two scholars—Edward Sapir and Benjamin Lee Whorf—who mainly worked in the 1930s,¹² although they were definitely not the first people to have formulated the thesis.¹³ Furthermore, they never wrote a paper together or formulated relativistic hypotheses explicitly.¹⁴ Independently, they did research on many different languages, among which notably Hopi. They concluded that some such languages could not adequately be translated into English, because they use different grammatical categories than English.¹⁵ They hypothesised that fundamentally different languages would have different effects on the speakers of those languages. This means that depending on which language one speaks, one might view, or structure, the world around oneself differently. Sapir wrote that

[...] the ‘real world’ is to a large extent unconsciously built up on the language habits of the group [of speakers of that language, LM]. No two languages are ever sufficiently similar to be considered as representing the

¹⁰[Brown, 1960], p. 53.

¹¹Ibid.

¹²See [Stam, 1977], p. 306. Harry Hoijer has coined the term ‘Sapir-Whorf hypothesis’, [Hoijer, 1954], p. 92.

¹³See e.g. [Koerner, 1998].

¹⁴[Hill and Mannheim, 1991], p. 386.

¹⁵[Lucy, 2001], p. 904.

same social reality. The worlds in which different societies live are distinct worlds, not merely the same world with different labels attached.¹⁶

Whorf emphasised that language imposes a kind of structure on our way of viewing the world:

We dissect nature along lines laid down by our native languages. The categories and types that we isolate from the world of phenomena we do not find there because they stare every observer in the face; on the contrary, the world is presented in a kaleidoscopic flux of impressions which has to be organized by our minds—and this means largely by the linguistic systems in our minds [...]. We are thus introduced to a new principle of relativity, which holds that all observers are not led by the same physical evidence to the same picture of the universe, unless their linguistic backgrounds are similar, or can in some way be calibrated.¹⁷

The Sapir-Whorf hypothesis is sometimes also called the ‘relativist’ view in reference to this ‘new principle of relativity’, and sometimes ‘Whorfian hypothesis’, for example by Brown and Hockett.¹⁸ In the course of this thesis, I will occasionally refer to the Sapir-Whorf hypothesis as the ‘relativist’ view, which I assume to be the exact same hypothesis, following [Lucy, 2001].¹⁹

One might summarize the Sapir-Whorf hypothesis as follows: “language provides a set of ‘ready-made’ categories. By learning a language, then, we acquire a categorical system that allows us to make sense of our experience.”²⁰ Nowadays, referring to ‘the Sapir-Whorf hypothesis’ is somewhat controversial. There are many different versions of the linguistic relativity hypothesis. Roughly, we can divide these into two groups: strong hypotheses, which state that language determines thought, and weak hypotheses, which state that language influences thought.²¹ The strong hypothesis can be characterised, according to Ahearn, as the thesis that “the particular language you speak rigidly structures your thought in an inescapable manner.”²² Perhaps unsurprisingly, nowadays there are few, if any, scholars who would subscribe to the strong hypothesis.²³ The weak Sapir-Whorf hypothesis, in contrast, expresses the thought that

¹⁶Edward Sapir, The Status of Linguistics as a Science, in *Selected Writings of Edward Sapir in Language, Culture and Personality*. D. G. Mandelbaum, ed., University of California Press, 1968, p. 162, from [Stam, 1977], p. 306.

¹⁷[Whorf, 1956], pp. 212–214.

¹⁸[Brown, 1989], pp. 369ff; C.F. Hockett, *Chinese versus English: An Exploration of the Whorfian Theses*, in [Hoijer, 1954], pp. 106–123.

¹⁹See [Lucy, 2001], p. 903 and others such as [Black, 1959] and [Levinson and Gumperz, 1991]. Others claim that linguistic relativity is the more general idea that language and thought are correlated. See e.g. [Stam, 1977], p. 306.

²⁰[Gomila, 2015], p. 293.

²¹Although this is already an oversimplification; it is quite telling that Max Black suggested that “an enterprising Ph.D. candidate would have no trouble in producing at least 108 versions of Whorfianism.” Quoted from [Koerner, 1998], p. 174. For the distinction between weak and strong relativity hypotheses, see e.g. [Kay and Kempton, 1984], p. 66; [Lucy, 2001], p. 903.

²²[Ahearn, 2012], p. 69.

²³See [Lucy, 2001], p. 903.

language [is] a system of interrelated categories, some of which were less obvious [...] than others. The sum total of a language's categories produces an overall worldview in people who speak that language. [...] The overall patterns of these linguistic differences lead, Whorf argued, to dramatic differences in the habitual cultural behavior of speakers of [different languages].²⁴

In what follows, I shall use the term 'Sapir-Whorf hypothesis' to refer to the weak version, since that is most probably what Brown understood by it. (See also Section 2.2.1.)

As one might expect from such an unquantified hypothesis, it is quite difficult to test. It is clear that if a test were to exist that could compare only the linguistic influence of language—and not the cultural aspects—and if one subsequently were to measure (or fail to measure) a significant difference in cognitive abilities between people who have different native languages, then the Sapir-Whorf hypothesis could be verified (or falsified). But this cultural component is especially hard to filter out, for the boundary between language and culture is vague. Moreover, it is hard to understand what would count as a 'cognitive difference'.

Brown created Loglan exactly to deal with these problems. Loglan is a language without a culture, according to Brown,²⁵ which would make it better suited for testing the Sapir-Whorf hypothesis than natural languages, at least in theory. It is nevertheless hard to compare Loglan to natural languages, for the reason that the latter *do* come equipped with a culture and a history. Brown acknowledges the difficulties:

[H]ow can we disentangle the culture from the language in which it is expressed? Isn't this, too, a case of disentangling—at first conceptually, and later experimentally—two forces that are in nature tightly wrapped?²⁶

Brown was confident that he could overcome these difficulties. He suggests an intensive "full-immersion" language learning workshop, preferably executed in different countries, and with people from different backgrounds. Besides a group of people learning Loglan, one would also have control groups learning natural languages and one group learning no new language at all.²⁷ One would administer a test before and after the workshop, to see if there is any difference in cognitive abilities. [Riner, 1990] reports that several informal tests with Loglan have been executed, and some "enabling effects" of Loglan could be reported, such as "richness and oddity of metaphor" and an "increased awareness of ambiguity".²⁸ As these workshops were very informal and only comprised a "small community" of people who were not selected randomly but probably had an interest in Loglan beforehand, we cannot rely on these test results as being any indication of whether Loglan does or does not demonstrate the truth of the Sapir-Whorf hypothesis.

To overcome cultural biases that would interfere with testing the relativist hypothesis, Brown took several measures. He constructed the basic predicate words from the

²⁴[Ahearn, 2012], p. 68.

²⁵See [Brown, 1989], pp. 21, 23

²⁶Ibid., p. 373.

²⁷Ibid., p. 381ff.

²⁸See [Riner, 1990], pp. 276-7.

eight most spoken languages.²⁹ The procedure works as follows. For constructing the Loglan word for ‘blue’, for instance, one takes the words for ‘blue’ from the eight most widely spoken languages. Then, a weight function is applied, so that the languages with the most speakers get the most weight. One calculates for each natural language how much a candidate translation (e.g. *blanu*) agrees with that language. Finally, one optimises the resemblance by multiplying the weight of the language with the level of agreement (expressed as a percentage). For *blanu*, the resemblance with the Chinese *lan* is thus $1 \cdot 0.25 = 0.25$. The weight function is 0.25 for Chinese, since at the time of publication of the paper, 25% of the people on Earth spoke Chinese and all of the letters of ‘lan’ occur in ‘blanu’, so the ‘level of agreement’ is 1. For Hindi, the resemblance is $0.5 \cdot 0.11$: half of the word ‘nila’ occurs in ‘blanu’, and 11% of the world population spoke Hindi at the time of publication.³⁰ The sum of all the levels of agreement for all eight languages is taken and optimised to be as high as possible. Unlike for example Esperanto, the lexicon of which is constructed only from Indo-European languages, Loglan would be easy to learn for the speakers of the eight most widely spoken languages, plus speakers of languages which are similar to those, or people who know such a language as a second language.³¹

Are these efforts enough to allow Loglan to be used in an experiment that is aimed at demonstrating or refuting the Sapir-Whorf hypothesis? That remains to be seen. Even if we concede that Loglan is culturally neutral, using a language in an experimental setting might still present problems. For how could one measure a change in cognitive abilities, such as improved logical skills, while ensuring that it is not simply a consequence of other factors? Perhaps second language-learners are by nature better at logic. How can we be certain that there are no extralingual factors that play a part? Perhaps there are additional cultural effects that correlate with a change in cognitive abilities.

Issues with the Sapir-Whorf hypothesis were formulated already in the 1950s and 60s,³² around the time that Brown started to work on Loglan. Problems were raised, for instance, with respect to the specification of the relation between language and culture. It was objected that this relation was not made precise enough.³³ Others have questioned the sociological basis for the principle of linguistic relativity (here synonymous with the Sapir-Whorf hypothesis) and criticised the thesis for being unfalsifiable.³⁴ The Sapir-Whorf hypothesis attracted many forms of criticism, and it quickly became clear that testing the hypothesis scientifically was going to be very difficult.

In the last few decades, following the influential paper by Berlin and Kay,³⁵ re-

²⁹See [Brown, 1960], p. 55ff. Basic predicate words are those from which complex predicates can be built. We will treat these in more detail in Section 2.1.2.

³⁰The letter ‘n’ is also in *nila*, but it appears that only letters count which are in the same order of the word in the natural language. See [Brown, 1960], p. 55. Examples are taken from the same location.

³¹See [Brown, 1960], pp. 55–6. Note that Brown assumes that “the probability of learning a new word in a second language on first, or very few, exposures is well approximated by the proportion of the phonemes in the corresponding native word that one finds in it.” (p. 56)

³²See [Stam, 1977], p. 306; [Levinson and Gumperz, 1991], p. 614; [Hoiyer, 1954] is an example of an early critical discussion of the Sapir-Whorf hypothesis. Other critics are [Lenneberg, 1953] and [Feuer, 1953], as J.B. Carroll writes in the introduction to [Whorf, 1956], p. 28.

³³See [Hoiyer, 1954], ‘Sixth session’, pp. 216–234.

³⁴See [Feuer, 1953], pp. 94ff.

³⁵[Levinson and Gumperz, 1991], pp. 613–4.

searchers have attempted to test Sapir-Whorf in different ways. Keeping the cognitive domain very small and only considering a single aspect of a language greatly enhances the testability of the hypothesis. For example, [Kay and Kempton, 1984] have shown that speakers of English, who distinguish between ‘green’ and ‘blue’, discriminate differently between colours compared to speakers of Tarahumara in Mexico, who have only one word for what we call ‘green’ and ‘blue’. It appears that speakers of English have less difficulty in grouping colours that clearly fall into the categories of what they call ‘green’ and ‘blue’, but that Tarahumara speakers are better at guessing how different colour samples are from each other on the boundary between what English speakers call ‘green’ and ‘blue’. This does not show, of course, that the Tarahumara people are bad at distinguishing between green and blue; it rather shows that language can play a role in how we structure our perceptual space, and that this structure in turn influences our cognitive processes. Other, more recent, studies have confirmed this reading of the Sapir-Whorf hypothesis in the domain of colour.³⁶

Similar studies have been done on spatial reference.³⁷ Not every language has words for left and right, front and back. Languages such as Guugu Yimithirr have an absolute orientation system (north, south, east, and west). That is, they would not say ‘the coffee cup is left of the book’, but (the equivalent of) ‘the coffee cup is north of the book’. Some research has also been done on numerical systems;³⁸ not every language has words for numbers greater than three, for example. Finally, the concept of time has also been used in tests for the Sapir-Whorf hypothesis.³⁹ Not only do some language communities (like speakers of Hebrew) conceptualise the flow of time from right to left, instead of from left to right as in English speaking countries, some use a vertical axis (like speakers of Chinese) and some use the space in front of them to refer to the past, and their back to refer to the future (such as the Ayamara). Such differences in representation are associated with different forms of speaking about time. In all these cases, significant differences in conceptualisation were found between communities of speakers of different languages. This might mean that they use (body) language differently to refer to different events, as in the case of the direction of time, or that they use different concepts to describe the relations between objects, as in the case of spatial reference. Speakers of languages that have a limited amount of concepts for number have been shown to count differently and compare sizes of objects differently.

Nowadays, the question in linguistic anthropology appears to be not so much *whether* the (weak) Sapir-Whorf hypothesis is true, but to what extent and in which cognitive domains it holds.⁴⁰ Gomila concludes⁴¹ that until now, relativist influences have been shown mainly for cognitive domains which are more abstract, such as time and number— exactly the domains in which language could be expected to play a supportive role for cognition. He explains:

³⁶See e.g. [Roberson et al., 2000, Winaver et al., 2007].

³⁷For example by [Brown and Levinson, 2009, Li et al., 2011].

³⁸See e.g. [Gordon, 2004, Pica et al., 2004, Saxe, 1982].

³⁹Such as in [Boroditsky and Gaby, 2010, Fuhrmann and Boroditsky, 2010, Boroditsky et al., 2011, Núñez and Sweetser, 2006].

⁴⁰See [Gomila, 2015], p. 194; [Thierry, 2016].

⁴¹[Gomila, 2015], p. 294.

It is not that all cognitive development is driven by language — that’s too strong a position; but when linguistic coding plays a role on categorization, linguistic differences give rise to cognitive difference. [...]

Language exerts its influence on cognition through linguistic development. It changes the initial, sensorimotor, and imagistic medium of the mental representation of a restricted implicit system into a more powerful explicit system. Or it facilitates attention to dimensions of experience for which no initial preference is set.⁴²

Thus, while there is a sense in which the Sapir-Whorf hypothesis appears to be true, it is only as a very nuanced version of the original formulations of the relativistic idea, and evidence has been provided only for limited domains.

1.3 Other purposes for Loglan

Besides its application in a test for the Sapir-Whorf hypothesis, Brown mentions three other potential beneficial uses for Loglan. The first is as an auxiliary language, that is, as a *lingua franca*. In 1960, Brown wrote that Loglan was not “intended as an auxiliary language,”⁴³ yet almost three decades later Brown wrote that he had changed his mind, and said that Loglan may be apt for the job:

In the last ten years I have made some discoveries about Loglan, perhaps also about the language arts in general, that persuade me that Loglan’s ‘severe ratiocinative cast’ would *not* unsuit it to be an international auxiliary tongue for everyman.⁴⁴

One function of Loglan that Brown *has* stressed from the very beginning is what he calls “the isomorphy between spoken and written language”. This means that, given a string of uninterrupted sounds or letters of Loglan words, one can (at least theoretically) dissolve the string uniquely into separate words.⁴⁵ He believed that this would enhance children’s ability to learn how to write, and that spoken and written forms of language could be transferred into each other more easily.⁴⁶

A third consequence of Loglan’s structure is that it would be particularly useful for machine translation. Brown claimed that since Loglan has an unambiguous syntax, it would be especially apt as a tool for translation between natural languages. Translating a document from the source language into Loglan would require some disambiguation work from humans, but once translated into Loglan, the transfer to the target language could be done computationally, and in as many languages as have dictionaries.⁴⁷

⁴²[Gomila, 2015], p. 298.

⁴³[Brown, 1960], p. 55

⁴⁴[Brown, 1989], p. 33.

⁴⁵[Brown, 1975], p. 35 ff. Note that this cannot be done in e.g. English, where ‘Godisnowhere’ can be resolved as ‘God is now here’ and ‘God is nowhere’.

⁴⁶[Brown, 1960], p. 63.

⁴⁷[Brown, 1989], p. 31. [Riner, 1990] notes that a ‘machine grammar’ had been developed for Loglan, which was provably unambiguous (p. 277-8).

Chapter 2

Loglan and Internal Criticisms

How many Loglanists does it take to change a broken lightbulb?

Two — one to decide what to change it into, and one to decide what kind of bulb emits broken light.

Arika Okrent, *In the Land of Invented Languages* (adapted)

In this chapter, we first focus on the characteristic properties of Loglan. After that, we look at some of the ‘internal’ criticism that has been raised in response to it. By ‘internal criticism’, I mean criticism that does not have anything to do with the attainability of the goals of Loglan, but rather with how Loglan is constructed to meet these goals. Hence, the criticism is on the internal structure of Loglan, not on its objectives or relation to matters external to the language. The criticism consists mainly of the reviews by Zwicky, Dillon and Freudenthal, and I will discuss their points according to the different ways in which Loglan is constructed to meet its objectives: as a test for the Sapir-Whorf hypothesis, an auxiliary language, and as a logical language, respectively.

I will argue that the majority of these criticisms are not well-founded and that those criticisms fail to do justice to Brown’s intentions. Let us first, however, discuss the characteristics and linguistic properties of Loglan.

2.1 The characteristics of Loglan

Unlike many natural languages, Loglan does not have a principled division into nouns, verbs, adjectives, et cetera. Instead, Loglan consists of predicates and names, along with a number of structural words. Let us examine these three different kinds of words in more detail. First, we will say something about the structure of the three different Loglan words. After that we will show, using examples, how these words are used in Loglan sentences.

2.1.1 Loglan letters and words

Loglan words are composed of 23 letters: the letters not present in Loglan but present in the English alphabet are *q*, *w*, and *x*.¹ The largest differences with English pronunciation are in the two letters *c* (pronounced *sh*) and *j* (pronounced like the *z* in ‘azure’).

Loglan words follow a certain structure, depending on their word type. Simple predicates (that is, predicates that are not created from other predicates) follow the structure²

CVC/CCV-CV

where C denotes a consonant and V a vowel. The forward slash denotes that we have two different possible choices. Hence *mrenu* (man) is a simple predicate, following the structure CCV-CV, and *fumna* (woman) is one, with structure CVC-CV.³

Names have the structure

[V/C]C.

The square brackets indicate that the part between brackets may be repeated any number of times. That is, there is no restriction on its structure, except that it must end in a consonant. Hence **Roma* is not a proper Loglan candidate for translating ‘Rome’; instead *(la) Romas* is chosen.

Simple structure words have the structure

(C)V(V).

The parentheses around elements indicate that those elements are optional. So *e* is a structure word (meaning ‘and’), and so is *no* (‘not’). Composite structures follow the structure

(C)V(V)[(C)V(V)]

Hence, *anoi* (meaning ‘if ... then’) is a proper composite structure word.

With the formal restrictions on words specified, let us look at their function.

2.1.2 Three types of word

Predicates

Predicates are the most flexible part of Loglan. As in predicate logic, each predicate has a determinate number of arguments. For example, the predicate *madzo* (‘X makes Y from Z’) has three arguments: one to determine who makes something, one to designate what is being made, and one to determine from what it is made. It is not necessary to use all these arguments in every sentence; we can leave some places open. Hence, *Da madzo de* is a perfectly good Loglan phrase, meaning ‘X is maker of Y from [something].’ The words *da*, *de*, *di*, *do*, *du* all function as dummy variables, roughly

¹They are however used in some scientific words, see [Brown, 1989], p. 55.

²I use the same notation as Brown in [Brown, 1989] here. See pp. 60–70.

³Note that the structure of composite and borrowed predicates can deviate from this structure, see [Brown, 1989], Sections 2.16–2.19, 6.4, 6.5.

equivalent to the English ‘something or someone’, but in use they are closer to mathematical variables. In order to be as clear as possible, and to accord with Brown, I will use the variables *X*, *Y*, *Z* to denote the correspondents of these textual variables in translations.

Leaving certain arguments ‘open’ has another function: it can alter the predicate to convey the meaning of a comparative.⁴ Consider

<i>Da blanu</i>	<i>X</i> is blue
<i>Da blanu</i>	<i>X</i> is bluer than [something]
<i>Da blanu de</i>	<i>X</i> is bluer than <i>Y</i>

Hence, the ‘open’ predicate in Loglan has a double function. It can be translated to either a statement or a comparative.

The order in which the arguments of predicates occur is fixed. This means that whenever you say

Da madzo de di,

de will refer to the thing made, and *di* will refer to the matter of which it is made. When you would say

Da madzo di de,

di will refer to the thing made, and *de* to the matter of which it is made. It is possible in Loglan to swap the arguments, to replicate e.g. the passive voice in English. One has to use one of the modifiers *nu*, *fu* and *ju* to swap the first argument with the second, third, and fourth argument respectively. Thus, in

Da nu madzo di de,

da refers to the thing made, *di* to the maker, and *de* to the matter of which it is made.⁵

It is also possible in Loglan to combine predicates. This can happen in various ways. The most direct way is to use the structure word *ze* to mix predicates. If we see a ball which is both red and blue, we can say *Da redro ze blanu balma*: *X* is a red-and-blue ball. Brown notes that a naive translation for ‘*X* is a red-and-blue ball’ might be something like *Da redro e blanu balma* (*X* is a red (ball) and blue ball), but that means that *X* is both (completely) red and blue, which is normally contradictory. What we mean when we use *ze*, rather, is that *X* has a blue and red pattern (e.g. stripes, blots, or any other pattern).⁶

A second way of combining predicates is using a construction that Brown called ‘metaphor’. His use of the word was quite different from the everyday use of ‘metaphor’. Brown referred, rather, to the “mechanism by which new meanings are spontaneously created by a speaker or writer combining old words in new ways.”⁷ One simply uses multiple predicates in succession; the former predicate is then said to *modify* the next to create a new predicate.⁸ For example,

⁴See [Brown, 1989], p. 83.

⁵Ibid., p. 86.

⁶Ibid., p. 113.

⁷Ibid., p. 23.

⁸Ibid., pp. 110-1.

Da corta mrenu

means ‘X is a short man’; the predicate *corta* (short) modifies the predicate *mrenu* (man). Another example:

Da bilti sucmi

means ‘X is beautiful as a swimmer’, that is, ‘X swims beautifully’. Again, *bilti* (beautiful) modifies *sucmi* (swim). We will see in Section 2.2.3 that this interpretation is not straightforward, and that several issues arise using predicates in this way.

A different way of combining predicates is to use them to introduce a new predicate into the language. There is a highly detailed procedure to do this, but it would lead us too far astray to discuss that procedure here.⁹ Brown emphasised that it is up to the interested learner of Loglan to make his or her own new predicates. Often, parts of two different predicate words are simply put together to form a new word, subject to certain conditions on the word structure. Brown explained how he came to the complex predicate *rachao*:

[T]he metaphor we first chose to convey the idea of a piece of luggage in Loglan was *traci bakso* (‘travel-box’ or ‘traveller’s-box’). This yielded the complex *rachao*. We decided that this word was best for ‘suitcase’ because (i) all pieces of luggage travel, (ii) not all boxes travel, and (iii) nearly all luggage these days is rectilinear or boxlike in shape.¹⁰

Using these new predicates, one can arrive at complex concepts denoting, among others, new inventions or what Brown called ‘local’ concepts which are culture- or region specific. Brown believed that this would prevent the language from becoming outdated and could help expand the language to fit individual speakers’ needs.¹¹

Names

Names in Loglan are not adopted as is, but are converted to the Loglan vowel-consonant pattern and spelling from their original language. For instance, Germany is ‘Doitclant’ (from *Deutschland*), Italy is ‘Italias’ (recall that names need to end on a consonant in Loglan) and the name John is translated to Loglan as ‘(la) Djan’.¹² According to Brown, the article is needed to mark the fact that one is designating something, and not calling someone. Only in the vocative, therefore, is the article omitted.¹³

Structure words

There are many different structure words with a range of different functions, but for our purposes it is only necessary to point out a few.

We have the four logical connectives, which are denoted by a single vowel. The word *e* means ‘and’, *a* means ‘(inclusive) or’, *o* means ‘if and only if’, and *u* means

⁹See also [Brown, 1989], Section 6, especially 6.4.

¹⁰Ibid., p. 326, emphasis original.

¹¹Ibid., p. 313ff.

¹²Ibid., sections 2.15 and 6.13.

¹³Ibid., p. 137.

‘whether or not’. Truth-functionally, ‘whether or not’ is interpreted such that ‘A whether or not B’ is true just in case A is true. The truth value of the sentence is thus independent of the truth value of B.¹⁴ It is curious that Brown added this last connective, as it is not included in standard modern predicate logic. It is hard to reconstruct Brown’s motives for adding *u*, but it might be that he chose to depart from formal logic here in favour of speakability and ease of constructing sentences. The normally present ‘not’ and ‘if ... then’ are not present as primitive connectives, but they occur instead in the language in a different way. Brown gives the negation its own category, apart from the other connectives, and it is translated as *no*. Implication is interpreted as the usual combination of negation and disjunction and translated as *noa* (not ... or).¹⁵

Quantifiers are also used, and Brown makes quite a fine-grained distinction into different gradations. Among others, the following quantified phrases are used:¹⁶

<i>ra</i>	all, every
<i>re</i>	most, more than half of
<i>ru</i>	enough, a sufficient number of
<i>su</i>	at least, or at least one, some of

These quantifiers function in much the same way as numerals in Loglan,¹⁷ and they can be used to quantify numbers, for example in

Ra le te mrenu *All (of) the three men*

Le functions as a definite article, *te* means ‘three’, and *mrenu* means ‘man’ or ‘men’. These quantified phrases can be combined with number words too:

Suto le fumna pa ditca *At least two of the women were teachers*

Here, *su* (at least) is combined with *to* (two). *Fumna* means ‘woman’ or ‘women’, and *ditca* means ‘teacher’. *Pa* indicates the past tense.

There are also *sentence quantifiers*. These are constructed from the non-designating variables and the quantified phrases above. Non-designating variables (*ba*, *be*, *bo*, *bu*) are used to denote things one cannot properly designate, much like the English ‘something’ or ‘someone’.¹⁸ Let us look at an example:

Ra ba nu clivu be *Every someone X is loved by someone Y*

The universal quantifier is thus associated with Loglan *ra ba*. The existential quantifier is associated with the statement of any non-designating variable (not previously used):¹⁹

¹⁴See [Brown, 1989], p. 102.

¹⁵Ibid., p. 92; 103. The scope of the antecedent and consequent is marked by *noa*: everything that comes before it functions as the antecedent, and everything that comes after it is the consequent, unless other structure words are used.

¹⁶Ibid., pp. 162–3.

¹⁷Ibid., pp. 162–4.

¹⁸Ibid., p. 179.

¹⁹This example and the following are from [Brown, 1989], p. 274.

Ba brano *Something X is bread/there is bread*

A more explicit existential quantifier can be made using *goi*, meaning ‘such that’:

Ba goi, ba brano *There is at least one X such that X is bread.*

Furthermore, the expression ‘*kanoi ... ki*’ can be used to determine the scope of the quantifiers:²⁰

Raba goi kanoi be goi ba clivu be ki ba cluva la Espanias
For every X: if there is a Y (such that): X loves Y, then X loves Spain

Goi here performs the function of a colon, or a ‘such that’ phrase. *Kanoi ... ki* means ‘if ... then’ in one instance of what Brown calls a ‘forethought connection’, but which is more commonly known as a *subclause*.²¹ *Kanoi* performs the function, here, of demarcating the beginning of the subclause, and to introduce the antecedent of the implication. The subclause is ended by *ki*.

There are not only ‘logical’ structure words in Loglan. For example, we can use temporal markers (*pa*, *na*, *fa*) to indicate whether something took place in the past, present, or future, respectively.²² We can transform *Da sucmi* (X swims/is a swimmer) using *na* (now) into *Da na sucmi*, which means that X is swimming now, or that X has the capacity to swim now. The structural word *po* turns any predicate (*Da mrenu*, X is a man) into expressing “an event, state or condition of being (something)” (*Da po mrenu*, X is the state/event/condition of being a man).²³ We can use words (*li... lu*) to indicate paraphrasing or quoting, much like quotation marks in English.²⁴ We can use a modifier (*lo*) to turn a particular word (*Da mrenu*, X is a man) into a mass description (*Da lo mrenu*, X is a manhood).²⁵ We can indicate possession using another structure word (*pe*).²⁶ Moreover, from simple structure words one can construct complex structure words. One of Brown’s examples is *pacenoina*, which “means literally ‘before-and-not-now’ and translates the claim of English ‘no longer’ quite precisely.”²⁷ These are just a few examples to show that Loglan has many features that allow one to use many of the same constructions that one uses in natural languages.

The addition of non-standard connectives, making finegrained distinctions between quantified phrases, and the addition of many non-logical structural words, all demarcate a departure from stringent, straightforward logic and a move towards a natural language. Although Brown ultimately wanted his language to be logical, he did not intend to construct a kind of spoken form of logic. In the introduction to *Loglan I*,

²⁰[Brown, 1989], p. 279.

²¹Ibid., pp. 113–6.

²²Note that the use of these temporal markers is optional, in order to make Loglan more culturally neutral. Some languages, for instance Yukatek Maya, indeed use no (explicit) tense markers. See e.g. Bohmeyer, Jürgen. “Temporal anaphora in a tenseless language.” in *The expression of time in language* (2009), pp. 83–128. Bohmeyer mentions (fn. 1, p. 83) that there are also other languages for which an (optional) absence of tenses has been reported: Kalaallisut, Igbo, Burmese, and Mandarin, among others. Brown wanted to cater his language to speakers of such languages too. See [Brown, 1989], pp. 25, 86.

²³[Brown, 1989], p. 94.

²⁴Ibid., p. 141.

²⁵Ibid., p. 140.

²⁶Ibid., p. 154.

²⁷Ibid., p. 61.

he explains that Loglan does not function as a deductive system, nor is it wholly consistent or self-evident. Brown is of the opinion that “the maximization of Loglan’s logicity [...] has not been nearly as important in the early days of the language as the retention of the essential ways of speech.”²⁸ In order to test the Sapir-Whorf hypothesis, it is not necessary that Loglan be extremely close to predicate logic. It is more important to Brown for Loglan to be a *spoken language* which is at the same time significantly more logical than natural languages.

2.2 Internal criticisms

Three critical reviews of Loglan have been published in academic journals.²⁹ In this section, I will analyse these reviews, and formulate additional points of criticism. I attempt to show that even when we accept Brown’s initial assumptions, Loglan does not work as well as he claims. The discussion of these reviews gives us some insight in the problems that come with creating Loglan, and at the same time anticipates some of the issues that Quine has discussed, as we will see in Chapter 4.

The criticisms are divided with respect to the different goals of Loglan. First, I will look at problems that arise with using Loglan as a test-case for the Whorfian hypothesis. Then I will discuss the issues with using Loglan as a culturally neutral, international auxiliary language. Finally, I will look at difficulties associated with constructing a logical language.

2.2.1 Issues concerning Loglan as a test for the Sapir-Whorf hypothesis

One of the most obvious issues lies with the use of Loglan for testing the Sapir-Whorf hypothesis. Critics of Brown argue that the formulation of this hypothesis has been vague, and that Brown even assumes the hypothesis implicitly.

The formulation and testability of the Sapir-Whorf hypothesis

In assessing the question whether Loglan is ‘sufficiently’ like a natural language to properly function in a test for the Sapir-Whorf hypothesis, we need to know what Brown meant exactly by ‘testing the Sapir-Whorf hypothesis.’ Unfortunately, Brown remained very vague both about what the hypothesis says and what would count as a confirmation of it. We find various characterisations of the ‘Whorfian hypothesis’ in Brown’s work:

[T]he native speaker of any language is fated to see reality, and to think about it, exclusively on the terms and by the rules laid down for him by that language.³⁰

²⁸[Brown, 1989], pp. 23–4.

²⁹As pointed out in the Introduction, a fourth review is [Smith, 1991], but this review is merely a summary and contains no criticism; I will therefore pass over it.

³⁰[Brown, 1960], p. 53.

It is a major, but so-far untested, hypothesis of linguistic theory that each language tends to develop its own metaphysical outlook on the world.³¹

An important implication of [the Whorfian] hypothesis is that the widely differing structures of individual human languages must therefore set very different formal limits on the historical potentials of the various human cultures that are, in a sense, contained in them.³²

It was, [Sapir and Whorf] thought, as if human cultures were contained in their own languages, that each language sets limits on the minds of its monolingual speakers so that each culture was constrained in its development by the very structures of the language in which it was expressed. Thus individual human cultures seemed not to develop in certain directions but to develop quite freely, even luxuriantly, in others.³³

Does the Whorfian hypothesis mean that language influences how one views the world? Or merely its metaphysical structure? What kind of influence does Brown believe languages have? Is it a constraining influence, and does it influence how we as a culture develop?

In other passages, especially in the most recent editions of *Loglan 1*, Brown is slightly more precise. I take Brown to interpret the Sapir-Whorf hypothesis as the idea that one's language restricts one's world view in certain ways.³⁴ Language is seen as part of a culture, but also as constraining a culture.³⁵ It appears that Brown means that the 'structure' of one's language (that is, the grammatical properties³⁶) determines which thoughts are inhibited, and which thoughts come more 'naturally' or 'easily'. Grammar imposes a structure, or categorisation, on our categorisation of the world around us, and this process of categorisation makes it difficult to think outside that same categorisation.³⁷

A second issue with Brown's testing the Sapir-Whorf hypothesis with Loglan is the lack of clarity as to what would count as a 'pass' in experiments using Loglan. Zwicky argues that the only conclusions Brown says he can draw from a possible success of using Loglan in a Sapir-Whorf test are trivial. He refers to the remark by Brown that from such a positive outcome of the test he could draw two conclusions:

(1): the distinctions of logic *are* actively involved in thinking, and (2) the structural features of language *do* make a difference in our awareness of

³¹[Brown, 1975], p. 236.

³²Ibid., p. 1.

³³[Brown, 1989], p. 371.

³⁴Ibid., p. 20; see also p. 371, last paragraph quoted above.

³⁵Ibid., p. 20.

³⁶See [Brown, 1989], p. 374, "Whorf's containment model for culture-language phenomena is definitely restrictive, however ... at least that is most frequently the thrust of his arguments. Whorf uses the restrictive argument especially effectively with respect to obligatory grammatical rules: the fact that all Indo-European sentences, for instance, must bear some mark of tense. Also, he observes that I-E [Indo-European] predicates are sorted into unmixable 'metaphysical' categories: nouns for things and substances, verbs for actions and processes, adjectives for qualities, and so on. All these *structural features of languages* are seen by Whorf as limiting the domain of the possible for minds shaped by them." (emphasis added).

³⁷See e.g. [Brown, 1989], p. 21, 25, 144.

the relations between ideas.³⁸

Neither of these conclusions is contested, says Zwicky. The first is true because of our definition of what logic is; the second is supported by many publications, as we have also seen in Section 1.2. Moreover, these two conclusions hardly align with Brown's earlier formulations of the Sapir-Whorf hypothesis. Language does not so much *make a difference* in how we relate ideas, Brown believes, but rather influences which of these relations are (not) easily accessible to us. That there is a difference in "our awareness of the relations between ideas" is a very weak claim and "trivializes" the Sapir-Whorf hypothesis, says Zwicky.³⁹

It must be noted that this formulation of the Sapir-Whorf hypothesis does not occur in later versions of *Loglan I*, perhaps due to the influence of Zwicky's critique. In later publications, Brown only carefully points towards the nature of the 'liberating' and 'restricting' influence Loglan could have on speakers, if the Whorfian hypothesis turns out to be true.⁴⁰

Besides the claim that Brown's formulations of the Whorfian hypothesis do not align with his provisional conclusions, Zwicky argues that it is "extremely difficult" to imagine "a method which could measure the ease of thought and which would not be circular (that is, in which 'ease of thought' was not simply identified with facility in using the logic in question)."⁴¹ For if 'ease of thought' is identified with how easily one implements logic, and if Loglan speakers have measurably different thought structures from non-Loglan speakers (somehow), then all one has shown is that doing logic makes it easier to do logic. One needs a definition of 'ease of thought' which does *not* rely on logic. So far, Brown has not given any definition of what 'ease of thought' would mean. The closest he comes to such a definition is a list of characteristics of the long term effects Loglan *might* have on test subjects, but this list is not elaborated on either.⁴²

Although Zwicky does credit Brown with imaginative solutions and creativity, he concludes that Loglan can "hardly be taken seriously as a test of the Sapir-Whorf hypothesis."⁴³ I think that this claim is a little too strong in light of the recent developments of Loglan. We have seen that we can ascribe a consistent and sound interpretation of the Sapir-Whorf hypothesis to Brown. In recent editions of *Loglan I*, Brown

³⁸[Brown, 1966], p. 169, emphasis original.

³⁹[Zwicky, 1969], p. 457.

⁴⁰See [Brown, 1989], Chapter 7.

⁴¹[Zwicky, 1969], p. 457.

⁴²[Brown, 1989], p. 380: "(1) the understanding and the use of metaphor, as in the appreciation or composition of poetry, or in the acquisition of new vocabulary; (2) competence in achieving clarity in communication, as in the stylistic avoidance, or the editorial detection and repair, of both syntactical and lexical sources of ambiguity; (3) logical competence, as revealed by (a) the correct use and/or understanding of quantifiers, explicit and implicit ones; (b) drawing correct inferences from stated premises and/or detecting and correcting incorrect ones; (c) supplying the missing premises of incomplete arguments; and (d) the correct use and/or understanding of the logical modalities (actuality vs. potentiality, etc.). Finally, metaphysical awareness may also be argued to increase while acquiring competence in Loglan, and this might be measured by (4) the ability to understand and/or appreciate nonWestern cultural assumptions about reality, or by (5) the subject's ability to reexamine da's own assumptions. Inductive and abductive competence may also be expected to increase, as expressed in (6) the frequency and originality of new insights and hypotheses." With 'da', Brown means 'one' (indef. pers. pron.), he uses it as a loan word from Loglan.

⁴³[Zwicky, 1969], p. 457.

has adapted his formulations to make it clearer how he intended *Loglan* to be used in a test for the Sapir-Whorf hypothesis. Still, it appears to me that Brown's formulation of the hypothesis is not yet clear *enough* to use in any scientific test for the Whorfian hypothesis. This issue needs to be addressed if Loglan is to function as intended. It needs to be clarified, for example, when a test using Loglan would falsify or verify the Sapir-Whorf hypothesis, and what such a test would look like in detail. Moreover, in order to make such a clarification, the extent and nature of the purported influence of language on thought needs to be established.

Presupposing the Sapir-Whorf hypothesis

There might even be an implicit way in which the Sapir-Whorf hypothesis was assumed by Brown, Dillon contends.⁴⁴ For instance, Brown argues that the English sentence 'John and Bill painted the house' is ambiguous, since it is not specified whether John and Bill painted the house together or whether they both painted a different house at the same time (or, to add a further interpretation, made a painting of a house!). Loglan forces one to say whether John and Bill painted the house jointly or separately, which should make Loglan less ambiguous than English. That is, we have a difference in Loglan between

La Djan *e* la Bil pa pinduo le hasfa *John and Bill both painted the house*

and

La Djan *ze* la Bil pa pinduo le hasfa *John and Bill jointly painted the house*⁴⁵

The logical connective *e* signifies that we have two statements, connected by 'and': John painted the house *and* Bill painted the house. The structure word *ze*, on the other hand, mixes *la Djan* and *la Bil* so that they become one unity that is painting the house. There is hence a grammatical difference between the two interpretations of the sentence 'John and Bill painted the house'.

In English we can make the same distinction as in Loglan: we can say 'John and Bill jointly painted the house' or 'John and Bill separately/individually painted the house'. The reason why Brown rejects this solution is that

[...] while the English phrase 'and jointly' *can* be used to replace 'and' in each of these sentences, it does not occur to the English mind to do so. For the metaphysical orientation of English suggests no such distinction. Therefore the word 'and' [...] means some curious unresolved blending of the ideas of connection and mixture which are in Loglan utterly distinct.⁴⁶

Dillon argues that Brown thereby effectively assumes the Sapir-Whorf hypothesis, the very hypothesis which he intends Loglan to test. Moreover, Dillon writes that the different uses of 'and' can easily be accommodated for in English, by using 'separately' or 'jointly'. Precisely because we can express the disambiguated sentences in English,

⁴⁴See [Dillon, 1979], p. 249.

⁴⁵From [Brown, 1989], p. 200.

⁴⁶Ibid., emphasis original.

too, “the difference between Loglan and English is [...] hardly dramatic enough to support a difference in metaphysic[s].”⁴⁷ And hence Loglan cannot be used in a test for the Sapir-Whorf hypothesis, he argues.

Dillon’s argument is not very clear, but I assume that he is referring to the passage above where Brown writes that “the metaphysical orientation of English suggests no such distinction”. One could interpret this passage as expressing that because English metaphysics is different from Loglan metaphysics, we will not (easily) think of disambiguating the different interpretations of ‘and’ in English. That is, the structure of our language influences the structure of our thought.

Dillon misinterprets Brown’s formulation of the Sapir-Whorf hypothesis slightly, however. Brown does not need to claim that there is a dramatic difference in metaphysics between Loglan and English, or that one can express things in Loglan that one cannot say in English. Recall that Brown’s formulation of the Sapir-Whorf hypothesis says that it is *easier* in some language to express some distinctions (related to metaphysics) than in others. If the Whorfian hypothesis were true, a Loglan speaker would have less trouble making certain distinctions than someone who speaks, say, only English. It is illustrative to examine another of Brown’s remarks about English and Loglan: “We all know people,” Brown writes, “who have never said—and in the remainder of their lives will never say—that something is A ‘if and only if’ it is also B. That particular shade of logical English lies unused in their sign kits. It is there. Each of the words is there.”⁴⁸ In Loglan, Brown appears to say, the logical tools would lie closer to hand, as it were. This passage, too, seems to be testimonial to Brown’s assuming the Sapir-Whorf hypothesis.

The trouble with the passage about the use of the word ‘and’ is that it is not entirely clear what Brown meant by, or implied with, “metaphysical orientation” and “it does not occur to the English mind”. If Brown means that speaking English structures one’s mind, or that it comes with a metaphysics that limits speakers of English in certain ways, then Dillon is correct and Brown assumes what he intends to test.

Brown is vague on further occasions.⁴⁹ I will argue that the vagueness of Brown’s formulations licences one to understand these formulations as assumptions of the Sapir-Whorf hypothesis. However, as we will see, Brown’s assumption does not undermine Loglan’s functioning as a scientific instrument for testing the relativist hypothesis. Let us first consider some other occurrences where Brown comes close to making Whorfian assumptions.

Another occasion where Brown seems to assume the Sapir-Whorf hypothesis is when talking about the idea of using predicates without a predicate marker as expressing the potentiality of a property. He writes: “This is a troublesome notion to the English mind.”⁵⁰ He seems to assume here that interpretations of properties which are not overt in English will be hard to comprehend for speakers of English. Here, as in Dillon’s example, Brown is vague: what does he mean by ‘the English mind’? Unfortunately, his vagueness licences an interpretation of this phrase where he does assume

⁴⁷[Dillon, 1979], p. 249.

⁴⁸[Brown, 1989], p. 35.

⁴⁹See e.g. [Brown, 1989], pp. 25, 32, 91, 104, 108, 140, 144. Most of these are however very close to the occasions that I discuss below, so I will pass over them.

⁵⁰[Brown, 1989], p. 91.

the Sapir-Whorf hypothesis. According to such an interpretation, Brown implies that any categorisation inherent in a language makes it difficult to think outside of that categorisation. This is dangerously close to one of Brown's earlier formulations of the Sapir-Whorf hypothesis: "[T]he native speaker of any language is fated to see reality, and to think about it, exclusively on the terms and by the rules laid down for him by that language."⁵¹ Because the 'English mind' is 'fated' to see reality through the English grammatical structure, Brown appears to say, it is hard for an English speaker to think outside such rules, and to see reality in a different way.

A final example is the passage where Brown speaks about 'abstract descriptions'. These are words that designate qualities or attributes, such as 'virtue', 'length', and 'goodness'. Brown claims that

Talking abstractly about things that can be talked about concretely is not a very satisfactory procedure in any language. On the other hand people do have genuine attitudes toward abstract things, if only because the structure of their language tempts them to see the world in an abstract way.⁵²

Again, Brown's vagueness of language makes it difficult to say conclusively that he assumes the Whorfian hypothesis: what does he mean by 'tempting people' to see the world abstractly, for instance? What are 'genuine attitudes'? If we take Brown to mean that the structure of one's language potentially facilitates looking at reality in an abstract way, then Brown indeed assumes (his version of) the Sapir-Whorf hypothesis here.

We conclude that because Brown occasionally writes in a quite vague and literary way, it is possible to get the impression that he assumes the Sapir-Whorf hypothesis. There is a certain irony in the fact that, although Brown aimed Loglan to be unambiguous and logically precise, his own vague use of language licenses the reader to interpret him as assuming the Sapir-Whorf hypothesis.

Nevertheless, although it is certainly very objectionable that Brown makes a Whorfian assumption in his writings in *Loglan I*, the passages where he makes that assumption are philosophical reflections on the structure of Loglan. They have very little influence on the construction of Loglan itself. The assumption, therefore, does not have to be fatal to Loglan, although it is quite unfortunate that Brown made it.

2.2.2 Issues concerning Loglan as an auxiliary language

Recall that one of the merits of the use of Loglan as an auxiliary language is that it is, to some extent, culturally neutral. Brown claims this in various places.⁵³ Although Brown says that he is "perfectly certain" that he has not accommodated Loglan completely for speakers of different languages,⁵⁴ he does mention several ways in which Loglan is culturally neutral.

⁵¹[Brown, 1960], p. 53.

⁵²[Brown, 1989], p. 144. (Cp. [Quine, 1983], p. 119.)

⁵³For instance in [Brown, 1989], pp. 26, 63. See also [Brown, 1960], p. 55.

⁵⁴[Brown, 1989], p. 26.

The most obvious way is the use of predicates and subjects instead of nouns, adjectives and verbs. This latter distinction between different lexical categories, according to Brown, is typically Western. Avoiding this distinction ensures that Loglan also avoids “making the metaphysical distinctions between ‘processes’ and ‘things’ and between ‘substances’ and ‘attributes’ that have long troubled Western thought.”⁵⁵

Another way in which Loglan is cultural neutralness, Brown wrote, is by making the use of tense markers optional:

Thus any speaker, from any culture, should find it possible to regularly express in Loglan what he takes for granted about the world; and he will be able to do this without imposing—or what is perhaps more to the point, without being able to impose—these assumptions on his auditor. Thus, Loglan has many optional grammatical arrangements, but very few obligatory ones. There is no obligatory tense system, for example, as there is in English.⁵⁶

Other ‘optional grammatical arrangements’ include a case system, a gender system, and flexibility in the SVO-structure.⁵⁷

Finally, the fact that all words in Loglan are constructed from their equivalents in the eight most widely spoken languages greatly enhances learnability for speakers of those languages too, according to Brown. Hence it is more culturally neutral than artificial languages based on only, say, languages from the Indo-European family. Related to this feature is the fact that proper names are adapted to fit the Loglan vowel-consonant structure from the way they are pronounced in their original language (e.g. *Doitclant*).

There are however critical issues with this cultural neutrality and with the aim to make Loglan unambiguous, as Zwicky argues. The first concerns the implementation of the temporal markers. A second point of critique is that Brown’s choice of colour words reveals his bias towards Indo-European languages.

Temporal markers

In Loglan it is not mandatory to use tense markers. The tense markers are the structural words *na*, *fa* and *pa*, which denote present, future and past tense, respectively. When no tense marker is used in a certain sentence, that sentence merely expresses the fact that something or someone has a property. Hence,

Da sucmi

means ‘X swims’ (or ‘X is a swimmer’). It expresses the idea that X has the ability to swim, or “that he can swim if you let him.”⁵⁸ On the other hand,

⁵⁵[Brown, 1960], pp. 56–58. Later, Brown formulates this a little more subtly, writing that “For your mind, gentle reader, has almost certainly been shaped by an Indo-European language. It is therefore admirably equipped to deal with a world of enduring objects (nouns), of actions and processes (verbs), of permanent qualities (adjectives), of transitory qualities (one kind of adverb), and of qualities of qualities (another kind of adverb); and it is just this partition of the world you will miss in speaking Loglan.” [Brown, 1989], p. 85.

⁵⁶[Brown, 1989], p. 35.

⁵⁷*Ibid.*, pp. 25, 35.

⁵⁸[Brown, 1989], p. 86.

Da na sucmi

means that *X* is swimming *right now* ('na'), or that he is exhibiting the property of being able to swim *right now*. This sort of construction also works with predicates that do not express an English verb but a property:

Da cabro

means that *X* is flammable (lit. 'X is burn-able'), whereas

Da fa cabro

means that *X* will burn, or will burst into flames.

Zwicky argues that this interpretation of predicates in combination with tenses in some cases makes it difficult to interpret sentences. The fact that Brown states that *Da sucmi* (lit. 'X swims') could mean 'He can swim if you let him' has a number of problematic consequences. For starters, it is not clear how we should interpret this in the case of other predicates like *blanu* (blue). For does *Da blanu* mean that *X* is blue if we let it? Hopefully not. Moreover, when we *do* add a tense operator, as in *Da na sucmi*, we say, according to Brown, that "he is exhibiting that property [of being able to swim] right now."⁵⁹ But that does not necessarily align with our previous sense of *Da sucmi* as 'He swims', Zwicky argues. For "X could exhibit the property of being able to swim in a number of ways besides actually swimming; he could give a demonstration out of water, or a convincing description of how he swims, for example."⁶⁰

These are not the only ways in which the lack of a tense marker can lead to ambiguities, Zwicky remarks. If we introduce a negation, as in *Da no sucmi*, we do not know if this sentence means that he is unable to swim or that *X* is able *not to swim*. We can extend Zwicky's argument to the case where tense markers are introduced, too. Does *Da na no sucmi* mean 'X does not swim now' or 'X is not able to swim right now'?

This sort of difficulty is not unsolvable; it might be remedied by using a more precise interpretation of tensed (and untensed) sentences.⁶¹ In fact, Loglan has a helper word *po*, which is "the event/act/state/condition operator."⁶² Hence, we could ascribe to sentences such as *Da na sucmi* the meaning 'X is swimming right now', and translate 'X has the ability to swim right now' as *Da na kanmo le po sucmi*, literally 'X now has the ability (*kanmo*) of swimming (*le po sucmi*).' Hence *po* combines with *sucmi* to make 'the state of swimming' (*le* is an article). This type of construction would also resolve the above ambiguity in case tense markers are not used.

I conclude that although Zwicky is right that Brown's formulation of the interpretation of (un)tensed predicates gives rise to ambiguity, the issue can be remedied by the use of Loglan's structural words. It is not an ambiguity in the structure of Loglan, and hence not immediately threatening to Loglan's goals. We will treat the structural ambiguities further in Section 2.2.3.

⁵⁹[Brown, 1989], p. 87.

⁶⁰[Zwicky, 1969], p. 451.

⁶¹The ambiguity might also be resolved by a more strict interpretation of the predicates, but Brown wanted only to eliminate *syntactic* ambiguity, and stressed that he wanted speakers to invent new words whenever they wished. See [Brown, 1975], pp. 236 ff and Section 2.2.3.

⁶²[Brown and Brown, 1989].

Colour words

The Loglan word for 'blue' is *blanu*. As with all Loglan words, this word was created by looking at the words for 'blue' in the eight most widely spoken languages, among which Russian. The trouble with the creation of the word *blanu* is that Russian has *two* words for what in English is referred to as 'blue': *goluboi* (dark blue or navy blue) and *siniy* (light blue). Brown just takes *goluboi* as *the* Russian word for blue. This might suggest that Loglan is not completely culturally neutral. Deciding which colours one accepts as 'primitive' is a choice that enables speakers of a language with the same or a similar colour system to speak Loglan more easily.

But if Loglan is not as culturally neutral as it is claimed to be, can it really function as a test case for the Sapir-Whorf hypothesis? Are the defects large enough so that it 'distracts' from the logical structure that would 'shape' our thought if the Sapir-Whorf hypothesis were true? In this case, one could argue that whenever, for example, a speaker of Russian is trying to learn Loglan, they need to adjust to the 'English elements' of Loglan, such as there being just one word for 'blue'. Hence, the cultural bias of Brown might interfere with Loglan's function as a culturally neutral language. It need not interfere with Loglan as a *logical language*, however, as we will see in the next section.

2.2.3 Issues concerning Loglan as a logical language

Brown claims that his language is free from syntactic ambiguity.⁶³ Brown only cares about the *syntactical* (or grammatical) ambiguities, because making a language semantically (or lexically) unambiguous is both highly difficult and not necessary for attaining Brown's goals. For Loglan needs only to be a structurally logical language. By 'grammatically' or 'structurally unambiguous', Brown meant that "every well-formed Loglan utterance has [...] one and only one *grammatical* interpretation."⁶⁴ That is, although predicates may be interpreted in multiple ways, it is always clear how the sentential structure should be understood. Brown for example distinguishes between different interpretations of the English 'and' (*e*, *ze*), but he cares little about the fact that 'good' (*gudbi*) will have slightly different meanings, depending on whether it applies to for instance 'mother' or 'pie'.⁶⁵

Brown claims that a computational model has been constructed that can be used to show that Loglan is grammatically unambiguous.⁶⁶ Riner reports that 'Project Mac-Gram', which aimed to write a machine grammar for Loglan, was completed in 1982.

A conflict-free grammar had been developed that successfully parsed the whole of the known language, and the grammar of Loglan has remained in conflict-free condition ever since.⁶⁷

⁶³ [Brown, 1989], p. 26. In this thesis, I will use the terms 'grammatical' and 'syntactical' interchangeably, to accord with both Brown's terminology and to the presently more common terminology, respectively. The same holds for 'lexical' and 'semantical'.

⁶⁴ [Brown, 1989], p. 15.

⁶⁵ Note that there is a difference between 'good' and e.g. 'morally good' (*gudkao*) and 'effective' (*skucko*) in Loglan. See [Brown and Brown, 1989].

⁶⁶ [Brown, 1989], p. 14.

⁶⁷ [Riner, 1990], p. 277.

Current director of Loglan Randall Holmes remarks that this claim is correct, although some preprocessing of Loglan was necessary, before it could be parsed.⁶⁸ It is beyond the scope of this thesis to investigate to what extent the MacGram project really was successful. I will therefore pass over this point and give Brown the benefit of the doubt.

Other issues with the supposed logicity and unambiguity of Loglan remain. Several reviewers have claimed that Loglan is not all that unambiguous, and that the logical structure is not rigorous enough. Such issues can be grouped into two classes: issues, first, with the modification of predicates and the use of connectives between predicates, and secondly difficulties with the categorisation by means of predicates. Let us examine these issues in more detail.

Problematic predicates

In Loglan, it is possible to string predicates together, as in *Da blanu kusfa*; ‘X is a blue house’. In such cases, the former predicate modifies the latter one. This is also called a ‘metaphor’, as we have seen in Section 2.1.2. Brown never explains, though, how this is supposed to work logically. Freudenthal, himself a language builder,⁶⁹ remarks that this is problematic; in a logical language it should be clear about how the grammar functions logically.

Do [the modifiers] mean that a predicate has hidden free places which are not accounted for in the official number? Are modifiers to be considered as predicates or as variables or, perhaps, as structure words?⁷⁰

To understand what Brown has in mind, let us consider the example of *Da cortu mrenu*. Brown explains how we should interpret this modifier-modified predicate pair as follows:

If X is a short man, does this mean that he is short *and* a man? Not necessarily [...]. All we can surmise is that he is short *for* a man; that is, a short type of a man. What about blue houses? And beautiful swimmers? can we expect them to be really blue? And really beautiful? All over? Inside and out? Certainly not; for blue houses and beautiful swimmers, like short men, are blue *for* houses and beautiful *as* swimmers. That is, they are blue among houses and not among skies, and it is their *swimming* that is beautiful, never mind their eyes.⁷¹

This only shifts the burden of explanation, however. For how are we to decide whether something is ‘blue *for* a house’? Or good *as* a mother? In answer to these questions, Brown appeals to our innate understanding of language

⁶⁸“Some preprocessing of Loglan sentences was required (and I do see problems with their preprocessing as well) to produce a form which supported a demonstrably unambiguous grammar.” Correspondence to the author, 21-03-2018.

⁶⁹He created the language Lincos, aimed at ‘cosmic intercourse’; i.e., a language so logical even beings who had no knowledge of earth would be able to understand it. [Freudenthal, 1960], and see [Okrent, 2009], p. 212.

⁷⁰[Freudenthal, 1968], p. 446.

⁷¹[Brown, 1989], p. 96, emphasis original.

The first time we hear the metaphor ‘good mother’ we are in a good position to guess what the speaker means, from our knowledge of the uses of these simple predicates in the language. But we cannot be sure. Neither—until one has seen one—can one be sure what a blue house is. How blue does a house have to be to be blue? [...]

In Loglan we surmise, with most logicians, that such questions are unanswerable by direct analysis. We suppose that the meanings of predicate expressions formed by two or more constituent predicate ideas are like the meanings of simple predicates themselves: essentially unitary and unanalyzable. A blue house is ... well, a blue house.⁷²

Brown assumes that with these metaphors, we have encountered the ‘rock bottom’ of what we can explain. He assumes a rather pragmatic stance: we will simply know what a blue house is when we see one. This stance accords with Brown’s emphasis on syntactic rather than semantic disambiguation in Loglan. If we want to talk logically, we do not care so much about the difference between blue houses and blue skies. What is more important is that we can disambiguate between cases such as ‘John and Bill jointly painted the house’ and ‘John and Bill individually painted the house’.

I take Brown to mean that when we modify predicates, we actually create a *new* predicate. That is, *blanu kusfa* functions as any other predicate in Loglan. Brown never says this explicitly, but it is implied. He writes, for instance, that “the meanings of predicate expressions formed of two or more constituent predicate ideas are like the meanings of simple predicates themselves: essentially unitary and unanalyzable.”⁷³ This reading has been confirmed by Randall Holmes:

Modification is definitely not intended to be a logical construction, and only supports logical transformations in limited ways. What Brown has in mind is precisely the idiosyncratic thing we do when we say ‘blue house’ or ‘enter dramatically’ or even ‘blue moon’; we are actually creating a brand new predicate in a way which we hope our reader will understand.⁷⁴

Hence, although modification is thus not a logical procedure, it is clear what happens, and since the resulting predicate expression still functions as a predicate, Loglan’s structure does not lose any logicity.

Another issue with the modification of predicates is raised by Zwicky. He argues that it causes regularity to interfere with expressivity. One instance of such interference is “the treatment of connectives with predicates.”⁷⁵ Brown has included causal predicates, because the connectives he introduced did not express causal connections. One example Zwicky gives is the sentence ‘If you water a plant, it will grow.’⁷⁶ This sentence is impossible to translate into Loglan, Zwicky argues. There are certain words that indicate causation: *ckožu*, ‘X is a cause of Y’, *modvi*, ‘X is a motive to do Y’, *raznu*,

⁷²[Brown, 1989], p. 96.

⁷³Ibid.

⁷⁴Private correspondence to the author, 29-01-2018

⁷⁵[Zwicky, 1969], p. 450.

⁷⁶Ibid., p. 451. To be precise, Zwicky writes “if you water it, it will grow”, but I have altered the sentence to make it clearer.

‘X is a reason for Y’ and *snola*, ‘X logically implies Y’. There are also causal connectives related to these predicates: *kou* (‘because of’), *moi* (‘because of motive’), *rau* (‘because of reason’) and *soa* (‘because of premises’). But these connectives associate *assertions*, not sentences. Hence, if we write

Tu pa cutri durzo da kou da pa rodja,
You watering_{past tense}-does-(cause of)-it-growing_{past tense}
(You watered it) caused (it grew).

we *assert* that we water the plant, and that it grows, and that there is a causal connection between the two. Hence, says Zwicky, “[the sentence] will be falsified by your failure to water the plant, not just (as in the case of material implication) by the plant’s failure to grow should you water it.”⁷⁷ Hence, while we can causally connect the predicates (*cutri* and *rodja*), that procedure interferes with how predicate logic works. Adding to Zwicky’s criticism, if we were to use simply logical implication, then the idea that watering the plant *causes* it to grow would be lost. The sentence

Tu pa cutri durzo da inoca da pa rodja,
You watering_{past tense}-does-(implies)-it-growing_{past tense}
(You watered it) implied (it grew)

expresses that there is a logical connection between the watering and the growing. It does not express, however, that watering a plant causes it to grow, as we do in English. Hence, we need a Loglan word that expresses the implication, but that also articulates the causal relationship between the watering and the growing, if we are to translate this sentence correctly.

Luckily, we can combine causal operators with connectives.⁷⁸ In this case we need the material implication, or *inoca* in Loglan. The resulting connective, then, is *inocakou*, which combines the causal power of *kou* with the implicative force of *inoca*.⁷⁹ It would mean ‘implies’ but in a causal way. Hence we may translate ‘If you water a plant, it will grow’ into:

Da cuirduo le herba, inocakou, hei rodja
(Someone/something-waters-the plant) implies_{causally} (it_{the plant} grows)

The operator *inoca* works such that the antecedent is everything before it (within the same sentence) and the consequent is everything that follows; *inocakou* inherits this structure.⁸⁰ The word *hei* literally means ‘h’ (the letter) and is used to refer back to a previous predicate starting with ‘h’: here *herba*, ‘plant’.⁸¹ The word *cuirduo* means ‘X waters Y’, replacing the older *cutri*. Using some recent features from Loglan, most importantly the possibility of combining connectives with causal operators, we can avoid the kind of problems with implication that Zwicky pointed out.

⁷⁷[Zwicky, 1969], p. 451.

⁷⁸As is done in [Brown, 1989], p. 293ff.

⁷⁹It must be noted here that this connective does not yet have a canonical meaning and does not yet appear in the Loglan dictionaries. It was proposed to be adopted into Loglan by Randall Holmes, following a discussion about Zwicky’s example, through the mailing list on 20-04-2018. See <https://mailman.ucsd.edu/pipermail/loglanists/2018/002068.html>.

⁸⁰That is, unless the structure words *ka*, *ke*, *ko* and *ku* are used, which demarcate subclauses. See [Brown, 1989], p. 268 for *ka*, *ke*, *ko*, *ku* and p. 272 for the construction for *inoca*.

⁸¹See [Brown, 1989], p. 134.

Categorisation

Zwicky argues that Loglan is not as structurally sound as Brown would have us believe.⁸² The issue is a consequence of the lack of a primary structure on which to base the conceptual distinctions that Loglan makes. For instance, one would need to have a basis from which to determine which colours we include in our system, and what part of the spectrum each colour word refers to. We have seen that Zwicky argues that Loglan is not culturally neutral in this respect. Zwicky argues that Loglan would need, rather than a set of colour names, a system with which to *describe* colour words in terms of hue, saturation, and so forth. In this respect, Zwicky writes, Loglan should be more like Wilkins's *Philosophical Language*:

In this connection, it is instructive to compare Loglan with a much earlier attempt at the construction of a spoken ideal language, the Philosophical Language of John Wilkins, Bishop of Chester (1668). The logical basis of Wilkins' language is Aristotelian-Scholastic; it is designed around an elaborate hierarchical classification of concrete and abstract notions by means of definitions per genus et differentiam. Thus what is missing in Loglan is what is most emphasized in Wilkins' language (and similar 17th and 18th century efforts).⁸³

I believe that Zwicky's proposal for a solution is not satisfactory, however, and that adopting such a Wilkinsian framework will not help Brown to attain his goal.

Loglan was not supposed to be completely precise about what 'blue' (*blanu*) means. In Loglan, *blanu* might be translated in slightly different ways, depending on the context. This is an instance of *semantic* ambiguity, however, not syntactic.⁸⁴ Moreover, adopting a framework will not cure the illnesses Zwicky has diagnosed in Loglan. For any framework brings a bias with it. It might make Loglan more logical, or more structurally sound; a framework like that of Wilkins might provide a rigour that Loglan is lacking (at least according to Zwicky). Yet it would also mean a serious compromise in learnability and cultural neutrality, which Brown regards highly, and which are important for reaching his goals with respect to the Sapir-Whorf hypothesis. Zwicky recognises this himself:

[T]he principles of syntax (that is, word arrangement) [in Wilkins' language] are incomplete and often obscure. In consequence one cannot imagine facile connected speech in Wilkins' language, despite its many intriguing features, although such speech in Loglan is at least conceivable.⁸⁵

What Zwicky does not recognise is that a lack of 'facile connected speech' would be unacceptable for Brown. It is crucial for Loglan as part of a test for the Sapir-Whorf

⁸² [Zwicky, 1969], pp. 455–6.

⁸³ See [Zwicky, 1969], p. 456. Note that Wilkins' language is not supposed to be 'ideal' in that it would perfectly mirror the structure of nature. Rather, his language was meant as a universally spoken language, and to advance our thinking. See also [Maat, 1999], pp. 340–1.

⁸⁴ See Section 4.3.

⁸⁵ [Zwicky, 1969], p. 456.

hypothesis that facile, connected speech is possible. For to compare Loglan to natural language, Loglan must work like a natural language, and smooth conversation must be possible.

The adoption of some framework like that of Wilkins is not possible for Brown for another reason. Brown aimed at making a language that was (more or less) *free* from metaphysical assumptions, apart from those which are logical in nature:

Another feature of the language that reflects its intended use as a laboratory instrument is its cultural neutrality. Partly this has been achieved by what we have come to call its ‘metaphysical parsimony,’ or the fact that its grammar presupposes a reasonably small set of assumptions about the world ... perhaps the smallest possible set, on our present understanding of language structure.⁸⁶

Hence, adopting a metaphysical framework that would decide which colour words to use is simply not an option for Brown. To put it even more strongly, it goes exactly *against* Brown’s goals of making a culturally neutral language ‘without metaphysics’. The colour system in Loglan is not an inherent part of the *logical* structure. If adopting the ‘English’ colour system means that some learners of Loglan would have to adapt to its distinction between colours, so be it.

2.3 Conclusions

We have seen that there are three word types in Loglan: predicates, names, and structural words. Each of these has a particular structure. The predicate words have been created from words in the eight most widely spoken languages, in order to make Loglan culturally neutral. Predicates can be combined to make new words in various ways.

There has been some criticism on how Loglan aimed to reach its goals. Zwicky argues that Brown’s formulation of the Sapir-Whorf hypothesis is not clear enough, and that Brown is not precise about what would count as a test for the relativity hypothesis. Indeed, Brown is never very clear about these matters. Dillon argued that Loglan assumes the Sapir-Whorf hypothesis. The abovementioned vagueness does allow one to interpret Brown as assuming the Whorfian hypothesis in various places. However, this assumption is not directly fatal to Loglan as a tool for testing the Sapir-Whorf hypothesis, because these assumptions do not have any effect on the structure of Loglan.

Zwicky also raises questions about Loglan’s purported function as a culturally neutral language. Indeed Brown has not succeeded in making his language completely neutral, especially with respect to colour words. This flaw is not a fatal one: it does not stand in the way of reaching Loglan’s goal of testing the Sapir-Whorf hypothesis. An issue with the function of Loglan as an auxiliary language is that it is not completely clear how predicates should combine semantically using connectives, Zwicky remarks. This issue has been solved by Brown in recent work, and Zwicky’s solution (of adopting a metaphysical scheme) would not be satisfactory to Brown.

⁸⁶[Brown, 1989], p. 25. Similar expressions can be found in [Brown, 1966], the edition that Zwicky was reviewing (p. 4).

The reviewers' calls for clarification are justified. Brown needs to be more specific about what he understands the Whorfian hypothesis to be and what would count as a confirmation of the hypothesis. Such vagueness leads to quite critical errors, such as Brown's assuming the Sapir-Whorf hypothesis in various places.

Nonetheless, the reviewers did not entirely understand how the goals of Loglan govern construction: on the one hand Loglan needs to be a spoken language, but on the other hand it needs to be logically rigorous and unambiguous, if Loglan is to serve in experiments testing the Sapir-Whorf hypothesis. Their misunderstanding leads them to reject Loglan as a means to test the relativist hypothesis.

We will see, in Chapter 4, that according to Quine, Loglan cannot be used for testing the Sapir-Whorf hypothesis either. Quine, however, gives quite different reasons. In order to appreciate these reasons fully, we first have to examine how Quine relates to his teacher, Rudolf Carnap.

Chapter 3

Quine and Carnap on Artificial Languages

The philosopher's task differs from the others', then, in detail; but in no such drastic way as those suppose who imagine for the philosopher a vantage point outside the conceptual scheme that he takes in charge. There is no such cosmic exile.

W.V.O. Quine, *Word & Object*

Before we can discuss the differences and similarities between Quine and Carnap, we have to take a small step back. In order to fully appreciate the criticism of Quine on the methods and goals of Loglan, it will be illustrative to look at the relation between Quine and Carnap. We will see in the next chapter that Quine's criticism on Carnap's philosophy of language resembles his criticism on the Loglan project. In this chapter, we will start with a quick sketch of the context in which Carnap, and later Quine, worked. Then we will compare them on two grounds: firstly on how they dealt with the concept of analyticity, and secondly on how they viewed artificial languages.

3.1 The linguistic turn in the twentieth century

Philosophy happens by way of explaining and discussing ideas in a particular natural language. However, in doing so, words can lose their ordinary meaning and new terms are invented (viz. Quine's example from Heidegger, "Das Nichts nichtet"¹). The natural language is at the same time used for everyday conversations. There is therefore a discrepancy between how philosophers use, say, English and how it is used in day-to-day contexts. This has led some philosophers to believe that ordinary languages are not particularly adequate for philosophy. In other words, it is felt that "because the primary use of ordinary language is communication, it is actually most *unsuitable* as a philosophical tool."²

¹[Quine, 1983], p. 133. See also [Carnap, 1967], p. 278.

²[Hacker, 2013], p. 927.

Different but related to the claim that our ordinary language is not adequate for philosophy, is the idea that the source of philosophical problems lies within (our use of) language. Instead of merely saying that ordinary language is inadequate or unhelpful for philosophy, the latter view expresses that ordinary language actually *causes* many, or all, philosophical problems.

Such ideas about the relation of philosophical problems and natural language are mainly associated with the linguistic turn of the twentieth century. Nowadays, they are associated primarily with philosophers such as Wittgenstein, but arguably the philosophers of the Vienna Circle can also be viewed as participants in this movement.³ As we have seen, such ideas about language were certainly not new. Many philosophers in the seventeenth century also believed that language can lead to confusion, and that the analysis of language can help us avoid these confusions. The difference with the analytic philosophers from the twentieth century is that the latter philosophers were occupied mainly with natural language use in empirical science.⁴ Some philosophical problems, particularly those of metaphysics, were seen as pseudo-problems that did not permit meaningful answers.⁵

In order to solve the problems of philosophy and to get rid of the pseudo-problems, some members of the Vienna Circle held,⁶ we would need new linguistic tools that would be better suited to express philosophical ideas. Especially the later Rudolf Carnap (from the mid-1930s on)⁷ was a proponent of this view. He created artificial languages which were meant to clarify language by logical analysis (or logical syntax, as Carnap calls it).⁸ Such an analysis would then help to solve philosophical problems.⁹ That is to say, all scientific statements could be translated into statements that only referred to experiential phenomena. As Murzi writes:

Since ordinary language is ambiguous, Carnap asserted the necessity of studying philosophical issues in artificial languages, which are governed by the rules of logic and mathematics.¹⁰

Artificial languages such as those that Carnap created can help to precisify language and function as tools that help philosophers to ban metaphysical confusion from scientific enquiry.

Quine is often seen as being opposed to Carnap's view. But he did recognise the

³See e.g. [Hacker, 2013], p. 936: "The upshot was that the members of the Circle adopted a set of methodological and substantive doctrines that might well be thought to characterize 'the linguistic turn in analytic philosophy'."

⁴[Hacker, 2013], pp. 936–7. Cp. the idea of creating a 'universal language' by e.g. Leibniz, Dalgarno and Wilkins in the seventeenth century. See [Losonsky, 2006], pp. 179–180, [DeMott, 1958] and [Maat, 1999].

⁵See [Murzi, 2017], Introduction; [Hacker, 2013], p. 927; [Wittgenstein, 1953], §109.

⁶More specifically, they are what Bergmann and Rorty call the "ideal language philosophers" (e.g. Carnap, Neurath), as opposed to "ordinary language philosophers" such as Schlick and Waismann. See e.g. [Bergmann, 1964]; see also [Hacker, 2013] and [Rorty, 1968], Introduction.

⁷With 'the later Carnap' I refer to the views expressed by Carnap roughly after the publication of *Logische Syntax der Sprache* in 1934. See [Creath, 1990], p. 316.

⁸[Carnap, 1967], p. 1–4. Note that Carnap's artificial languages are *formal* languages, not meant to be spoken languages, such as Loglan.

⁹See [Hacker, 2013], p. 937.

¹⁰[Murzi, 2017], Introduction.

importance of an analysis of language for philosophy.¹¹ It is illustrative to look at a remark of his on *semantic ascent*, the shift of a discussion from talking *in* certain terms to talking *about* them. In his *magnum opus* from 1960, *Word & Object*, he writes that

[t]he strategy of semantic ascent is that it carries the discussion into a domain where both parties are better agreed on the objects (viz., words) and on the main terms concerning them. Words, or their inscriptions, [...] are tangible objects of the size so popular in the marketplace, where men of unlike conceptual schemes communicate at their best. The strategy is one of ascending to a common part of two fundamentally disparate conceptual schemes, the better to discuss the disparate foundations. No wonder it helps in philosophy.¹²

For Quine, a conceptual scheme can be characterised as a point of view, or world view. Michael Lynch defines a conceptual scheme as “a network of sentences, believed to be true; none of which are more central or unrevisable than any other, and which face the ‘tribunal of experience’ as a whole.”¹³

According to Quine, semantic ascent is an example of a strategy that can help philosophers to resolve disagreement, by finding common ground on which the disagreement can be discussed. At least on that point Quine is in agreement with Carnap: they both believe that problems in philosophy can be resolved by means of adapting natural language.¹⁴ For Quine, semantic ascent is a useful strategy (among others) for clearing up differences in conceptual schemes. Carnap believes that formal artificial languages can help solve fundamental philosophical problems. We will see in Section 3.3 that there is also a sense in which Quine believes an unambiguous language can clarify philosophical thinking.

Although Carnap and Quine believe we can use language to resolve philosophical problems, they differ in some fundamental aspects, too. The most famous difference is represented in their dispute on the analytic-synthetic distinction. The discussion of this dispute will then pave the way for the subsequent discussion of their stances towards (artificial) languages.

3.2 Carnap and Quine on analyticity and philosophy

Quine, having been a student of Carnap, slowly distanced himself from his teacher’s views. The main difference lies in their famous disagreement over the concept of analyticity. This concept is related to the question of empirical certainty. In answering

¹¹Note that Quine believed that the importance of discussing the way in which we use language is useful for all sciences, not just philosophy. Quine saw philosophy as part of science. See [Quine, 1983], pp. 271–2; [Sinclair, 2017], Section 1.

¹²[Quine, 1983], p. 272.

¹³[Lynch, 1997], p. 408. [Davidson, 1973] seems to agree more or less. He does not give a completely explicit definition, but characterises them as “ways of organizing experience; they are systems of categories that give form to the data of sensation; they are points of view from which individuals, cultures, or periods survey the passing scene.” (p. 5)

¹⁴In [Quine, 1983], Quine explains that he accepts Carnap’s “distinction between the material and formal mode” (p. 272, fn. 2). In the material mode, we *use* language, whereas in the formal mode, we talk *about* language, much the same as in the process of semantic ascent. See [Carnap, 1967], p. 4 and p. 286 ff.

the question how we obtain certainty about the world around us, philosophers have asked themselves how knowledge and empirical data are related. It soon became clear that not all of our knowledge can be based on experience. Mathematics and logic, for example, seem to have only a very abstract relation with reality. How, then, do these fields of science obtain any certitude?

Carnap believed that certainty in logic and mathematics comes from our use of language. Mathematical axioms form *definitions*, telling us how certain terms ought to be used, be it implicitly. We adopt a form of language, a *linguistic framework*, given by some basic axioms and rules of inference.¹⁵ Some statements¹⁶ then, will be true by virtue of their meaning, given by those defining axioms. These statements are called *analytic* by Carnap.¹⁷ What such statements express will be completely certain independently of observationally obtained information. Analytic statements are contrasted with *synthetic* statements, which are true when they agree with empirical data. A tediously repeated example of an analytic statement is ‘No bachelor is married’. In the *definition* of ‘bachelor’, the idea that one is not married is contained. Hence the statement is true by virtue of the definitions of the words in it, or as Carnap would put it, by virtue of the semantical rules of the language in question (in this case English). An example of a synthetic statement is ‘Today the weather is nice’. Although this statement is unlikely to be true in Amsterdam, the statement can only be said to be true or false after confirmation or refutation by empirical data. Some philosophical problems can be resolved, according to Carnap, by explication of the linguistic framework in which one works. What sentences one accepts as analytically true depend on one’s linguistic framework.¹⁸

Quine’s position contrasts with Carnap’s with respect to this distinction. Quine famously argued in *Two Dogmas of Empiricism* that there can be no sensible distinction between analytic and synthetic statements.¹⁹ As [Creath, 2008] remarks, there are many different interpretations of what Quine’s issue with the analytic-synthetic distinction exactly was.²⁰ I will follow Creath and Decock, among others, in the interpretation that Quine believed the distinction to be too unclear to be of use.²¹ The only exception is the ‘vegetarian’ notion of analyticity, also called ‘stimulus analyticity’.²² This interpretation of ‘vegetarian’ analyticity is a reduced notion of analyticity “that is not based on the traditional epistemological distinction between linguistic and empirical matter.”²³ Rather, an analytic statement is determined in a more sociocultural way. Decock characterises the notion of a (stimulus) analytic statement as one “whose truth value only depends on the way normal speakers of a language have learned to use

¹⁵See e.g. [Carnap, 1947], p. 3ff; [Carnap, 1967], p. 1.

¹⁶In the course of this chapter, I will use ‘statement’ rather than ‘proposition’ or ‘sentence’ to maneuver between Carnap’s and Quine’s terminology.

¹⁷Note that up until *Meaning and Necessity* Carnap calls analytic statements *L*-true and synthetic statements *L*-indeterminate. See [Carnap, 1947], pp. 8–12 and [Murzi, 2017], Chapter 3.

¹⁸[Creath, 2008], p. 322.

¹⁹Although Quine is not the only one to have noticed problems with this distinction (see [White, 1950]), nor is *Two Dogmas of Empiricism* the only place where Quine has uttered his concerns. See [Creath, 2008], p. 332.

²⁰[Creath, 2008], p. 327.

²¹*Ibid.*, p. 328; [Decock, 2017], p. 292.

²²See [Quine, 1983], p. 67; [Decock, 2017], pp. 304–5.

²³[Decock, 2017], p. 304.

the language.”²⁴

There still might be statements that can be properly viewed as analytic or synthetic, according to Quine. What he disputes is that one can, so to speak, meaningfully divide all statements into two camps: analytic and synthetic ones.²⁵ One example of a statement for which it is unclear in which category it should belong is ‘Everything green is extended’.²⁶ We cannot possibly check whether this is true by any empirical procedure (nor is it clear what would count as confirmation). The sentence is not true in virtue of the meaning of the words that appear in this sentence either. There will be a grey area of many such statements that do not fit comfortably in either category. Carnap argued later that on a certain interpretation of ‘green’ (as something that only applies to extended matter), this sentence could be analysed as being analytic.²⁷ Of course, it remains to be seen whether Quine would agree with that interpretation of ‘green’.

In Quine’s philosophy, all scientific statements together form a body, a ‘web of beliefs’.²⁸ Some statements will be more viable to refutation than others. In the center of this web of beliefs, safely anchored, are the fundamental statements of mathematics and logic. These are supported by the rest of the scientific statements at the periphery of the web, which in turn form the empirical grounding of our scientific theories. Analytical statements will therefore reside in the center of the web, whereas synthetic statements will generally be at the edge of the web.

The web of beliefs can only be tested as a whole. In other words, there is generally no way we can refute a single scientific statement without it affecting the rest of the web of beliefs, too.²⁹ Our situation as language users, as Quine explains, is that we are stuck in ‘Neurath’s boat’. The boat is a metaphor for science, represented by the web of beliefs. We cannot, in general, change essential parts of the boat we are in without causing it to sink; rather we have to replace the boat bit by bit.³⁰ That is, we cannot “strip away the conceptual trappings sentence by sentence and leave a description of the objective world,”³¹ rather we can only “warp usage gradually enough to avoid rupture.”³²

Quine emphasises the need for behavioural criteria in order to determine which sentences are analytically true and which rely more directly on observational information. Carnap, on the other hand, is closer to seeing philosophy as a kind of conceptual engineering,³³ and, depending on one’s conceptual framework, a distinction between analytic and synthetic statements can be made. On the basis of such a characterisation of the difference between Quine and Carnap, one might be inclined to adopt the view that Carnap and Quine have radically different philosophies of language. This view is present, for example, in [Decock, 2017]:

²⁴[Decock, 2017], p. 304.

²⁵Ibid., p. 295.

²⁶[Quine, 1953b], p. 32.

²⁷In Rudolf Carnap, ‘Quine on Analyticity’, reprinted in [Creath, 1990], pp. 427–432.

²⁸This metaphor was explicated in [Quine and Ullian, 1970]; see also [Resnik, 2007].

²⁹The closer we get to the ‘edge’ of the web, the easier it will be to refute a single statement, as those statements are less dependent on other statements in the web.

³⁰[Quine, 1983], p. 3.

³¹Ibid., p. 5.

³²Ibid., p. 4.

³³[Creath, 2008], p. 323

In the 1940s and 1950s, there were two opposing positions on the purpose of linguistic research. On the one hand, a minority of linguists believed that linguistic research is subservient to social aims; linguistic reform became a means of social reform. The plans of these ‘linguistic engineers’ were opposed by radical descriptivists, who held that linguistics should merely describe languages as they are. Carnap and Quine are clearly extremes on opposite sides.³⁴

This characterisation, I believe, does justice neither to Quine nor to Carnap. (The later) Carnap does not believe that language can be normative in an absolute sense. Adopting an (artificial) language is a matter of choice, and only within that language can one speak of ‘right’ and ‘wrong’. As he writes in *The Logical Syntax of Language*:

In logic, there are no morals. Everyone is at liberty to build up his own logic, i.e. his own form of language, as he wishes. All that is required of him is that, if he wishes to discuss it, he must state his methods clearly, and give syntactical rules instead of philosophical arguments.³⁵

Although an artificial language can be used as a social reform, this does not mean that the language in itself is better overall than another. Carnap believes that we can only say that one language is more *useful* for a certain purpose than another.³⁶ Carnap’s formal artificial languages then, are only better suited for Carnap’s program: to clarify science, and to get rid of meaningless metaphysical statements.³⁷ Moreover, Quine does not, ultimately, believe that language can only be described. He does hold that language can be reformed in a certain sense: only in such ways that our boat keeps afloat. He writes:

On the face of it there is a certain verbal perversity in the idea that ordinary talk of familiar physical things is not in large part understood as it stands, or that the familiar physical things are not real, or that evidence for their reality needs to be uncovered. [...]

There are, however, philosophers who overdo this line of thought, treating ordinary language as sacrosanct. They exalt ordinary language to the exclusion of its own traits: its disposition to keep on evolving. Scientific neologism is itself just linguistic evolution gone self-conscious, as science is self-conscious common sense. And philosophy in turn, as an effort to get clearer on things, is not to be distinguished in essential points of purpose and method from good and bad science.³⁸

Quine urges us to take ordinary language seriously, but warns that we should not attempt to inhibit the changes that natural languages normally undergo. Science and philosophy ultimately take the same responsibility: to clarify and analyze what is going on around us, and to vary that theory gradually with new and/or conflicting empir-

³⁴[Decock, 2017], p. 296.

³⁵ [Carnap, 1967], p. 52. Emphasis original.

³⁶[Creath, 2008], p. 322.

³⁷Ibid., p. 326.

³⁸[Quine, 1983], p. 3.

ical evidence. Quine executes this mission in part through a clarification and analysis of language. In doing so, we may depart from ordinary language if we need to:

Opportunistic departure from ordinary language in a narrow sense is part of ordinary linguistic behavior. Some departures, if the need that prompts them persists, may be adhered to, thus becoming ordinary language in the narrow sense; and therein lies one factor in the evolution of language. Others are reserved for use as needed.³⁹

This is not the same, of course, as adopting or changing a full-fledged artificial, logical language in the Carnapian sense. Nonetheless, Quine did believe that ordinary (i.e. natural) languages could be reformed in some way, as we will see in the next section.

3.3 Artificial languages

The difference between Carnap and Quine is also significant for the purpose of this study if we consider more closely their stances towards artificial languages. To do that, it is important that we first distinguish different kinds of artificial languages. On the one hand we have formal artificial languages, such as the *Logische Syntax*, and on the other hand we have artificial languages intended to be spoken, such as Esperanto. This is not a strict division, but it is helpful to keep in mind that Carnap's own languages were of the first kind. I will call the former kind of artificial languages *formal*, the latter kind *informal* languages.

In order to get some idea of what Carnap and Quine might have thought about a Loglan-like language, it is illustrative to look at their sparse comments on artificial languages. Let us first briefly look at Carnap.

3.3.1 Carnap on artificial languages

Although Carnap only constructed formal artificial languages, he was also interested in informal artificial languages. This is illustrated by a remark in a letter to C.K. Ogden, who created the informal artificial language Basic English.⁴⁰

For many years I've had a lively interest in the problem of an international auxiliary language. In terms of theory I'm especially interested in the logical side of this problem, the question of logical syntax. But I've also been involved with the practical aspects (I can speak Esperanto, but am not dogmatically attached to this system). I consider an auxiliary language especially worthwhile and necessary for international relations in science.

Carnap did not believe that such languages could be *logical* in the sense that his artificial languages were:

³⁹[Quine, 1983], pp. 157–8.

⁴⁰Carnap to Ogden, 07-12-1933, quoted from [McElvenny, 2013], pp. 1203–1204. Basic English is an artificial language based on English. The idea is that it uses only a small portion of the English lexicon, about 850 words. Ogden created this language for teaching English as a second language. See [Ogden, 1944a] and [Ogden, 1944b].

Even though [artificial languages such as Esperanto] avoid certain logical imperfections which characterize the natural world-languages, they must, of necessity, be still very complicated from the logical point of view owing to the fact that they are conversational languages, and hence still dependent upon the natural languages.⁴¹

Carnap therefore holds that whenever informal artificial languages are created, they will have a weaker logical structure than formal logics or formal artificial languages. By extension, I believe Carnap would think this would also be the case for Loglan. Carnap's remarks suggest that he would not be inclined to consider Loglan to be perfectly and straightforwardly logical. Loglan is ultimately designed to function as an *informal language*, like Esperanto, and it is based on natural languages. Indeed, as we have seen in Chapter 2, Loglan was not intended to be a kind of spoken first order predicate logic. Rather, Brown used constructions such as metaphors to allow speakers of Loglan to converse naturally, even though such constructions might not have an exact equivalent within predicate logic.

3.3.2 Quine on artificial languages

Like Carnap, Quine was also familiar with Basic English. When Carnap writes to Quine to inquire about Ogden's language,⁴² Quine replies that he is "very much pleased" with it, but that one cannot use it as an approach to Standard English, as "some of the Basic locutions are inadmissible in the regular language."⁴³ Basic English simply departs too far from English to be compatible with it. Much later, in *Quiddities*, Quine says that informal artificial languages that would function as an international auxiliary language, such as Basic English or Esperanto, will not be of use:

With the increasing international use of English, especially in science, the need for an auxiliary international language abates apace. Such projects dwindle to more nearly the nature of a hobby, rather like their status in the days of Dalgarno and Wilkins when Latin still throve.⁴⁴

Such artificial languages, however interesting, simply became obsolete as soon as English started making an appearance as a *lingua franca*, according to Quine. Extending this view, we might say that Quine would not have believed in Loglan as an international auxiliary language, either.

Let us now discuss the other type of artificial language we have considered: the formal artificial language. In *Two Dogmas of Empiricism*, Quine commends that "there can be no thought of an illumination of the problem of analyticity from the side of the artificial language."⁴⁵ First, the concept of analyticity has to be clear before we can use it in artificial languages. Logical languages, therefore, cannot form a solution for the

⁴¹[Carnap, 1967], p.2

⁴²This letter was written about a month later than the letter to Ogden; Carnap to Quine, 06-01-1934, from [Creath, 1990], p. 126.

⁴³Quine to Carnap, 12-03-1934, English translation, from [Creath, 1990], p.133.

⁴⁴[Quine, 1987], p. 11.

⁴⁵[Quine, 1953b], p. 36.

dogma that there is a “fundamental cleavage between truths which are analytic [...] and truths which are synthetic.”⁴⁶

Quine mentions only two possible uses for formal languages in *Quiddities*. The first use, in a narrow sense, is mathematical. Artificial notation has been used in mathematics “for the purpose of facilitating thought on special topics.”⁴⁷ It is able to thrive there, unlike in projects like Volapük or Esperanto, Quine explains, because it is used only instrumentally, not as a goal in itself. Notation is merely a tool to do mathematics. The goal of a project like Esperanto, on the other hand, is to find a proper notational system: the language itself. Therefore, says Quine, it is highly susceptible to splintering.

The second application for artificial languages, more importantly, is in programming:

In recent years there has been a conspicuous outgrowth of mathematical notation, and more particularly of the notation of mathematical logic, that is somewhat nearer in spirit to the old full-scale artificial languages after all. I refer to Fortran, Loglan, and the other artificial languages that have been devised for the programming of computers.⁴⁸

It is curious that Quine emphasises the use of Loglan for the programming of computers. Although Brown evidently put a lot of effort into the development of a programming language based on Loglan, the project of creating a programming language was not completed before 1982; five years before *Quiddities* was published, and more than 25 years after Brown commenced his work on Loglan.⁴⁹ Instead, Brown has repeatedly emphasised the preoccupation with testing the Sapir-Whorf hypothesis. Quine’s remark does show, however, that Quine remained engaged with Loglan and that he did see merits in the creation of the language.

Brown has used notation as a goal in itself, as Esperanto and Volapük did, instead of viewing notation as a means to reach a goal (e.g. to clarify science). It is therefore not likely, I believe, that Quine would find Loglan’s greater goal of being ‘more logical’ than natural language credible. Similarly, he would presumably not subscribe to its function as a means to test the Sapir-Whorf hypothesis. In Chapter 4 we will see more extended arguments for this claim.

As we have seen, Quine held that a formal logical language functions only in a certain context, and certainly is not suitable for use in general. He wrote that any departure from ordinary language either becomes ordinary language itself, or is “reserved for use as needed.”⁵⁰ Vagaries and imprecise language have their function in ordinary

⁴⁶[Quine, 1953b], p. 20. See e.g. [Creath, 2006] and [Decock, 2017] (chapters 2 and 3) for a more in-depth treatment.

⁴⁷[Quine, 1987], p. 11.

⁴⁸Ibid.

⁴⁹See [Brown, 1989], §1.4; cp. [Brown, 1975], Chapter 1. The programming project was completed in 1982, according to [Riner, 1990] (p. 277). From the correspondence, it is clear that Quine knew about this at least a few years after that. In a letter from Brown to Quine from 1984, Brown writes: “We’ve completed three things in the last 8 years (despite our lack of funding): [...] (2) a brand new machine grammar of the language, which was a bit tricky to write but now makes Loglan (in some sense) ‘machine intelligible.’” (Brown to Quine, 21-02-1984).

⁵⁰[Quine, 1983], p. 158.

speech. For the promotion and improvement of science and philosophy, however, it is sometimes necessary that we simplify and clarify our language. This demands a departure from ordinary speech.⁵¹ Such departures may function as devices for simplification of our (scientific) theory, as is the case with mathematical and logical notation. The process of precisification and clarification of sentences of ordinary language turns it into a “canonical notation”.⁵² The canonical notation is very similar to natural language, except that ambiguities are no longer present.⁵³ It is in this context that Quine treated the vagaries of reference that we will encounter in Section 4.3.

Quine’s remarks might have given Brown some confidence for using Loglan as a universal language and as a means of translating between different languages. Brown believed, namely, that every sentence in a natural language could be translated into a corresponding Loglan sentence:

[O]nce the sense of any document has been satisfactorily rendered into Loglan [...] then the resulting document will be unambiguous in every sense of that word. Not only will the Loglan word-meanings be literally translatable into other languages [...] the document will now be expressed in a language that is syntactically unambiguous as well. So it will now be ready for machine-translation into other tongues.⁵⁴

Brown nowhere mentions Quine as giving him the validation for the belief that such a rendering into Loglan is actually possible. It might, however, be one of the “confirmatory insights” of Quine that Brown mentions, which “console anyone who would build a logical language”.⁵⁵

Quine’s canonical notation sounds on the surface very similar to a Carnapian artificial language, but Quine wants to reserve such a language only for specific purposes, where formalisation is needed for clarification or simplification of (part of) a specific theory.⁵⁶ Carnap, on the other hand, says that there can exist different linguistic frameworks, none better or more useful overall.⁵⁷ When we adopt a certain linguistic framework, however, we use it for the entirety of science, and within the framework a strict distinction between analytic and synthetic sentences can be made.⁵⁸ The difference between Carnap and Quine hints at a difference between the goals of Brown and Quine, too. If Quine believes that his canonical notation is only suited for particular, scientific, clarificatory use, then Loglan surely cannot function as it was intended to do. For Loglan is also meant to be a spoken language, that could be used for everyday conversation, and it has to be able to perform this function, if it is properly to be able to function for Whorfian experiments.

This perspective might explain why Quine mentions Loglan only in the context of (potential) programming languages. Loglan’s precisification and disambiguation can

⁵¹See [Harman, 1967], p. 352–3.

⁵²[Quine, 1983], pp. 158–161. See also [Harman, 1967], p. 352ff.

⁵³Quine shows how this can be done in [Quine, 1983], Chapter 4.

⁵⁴[Brown, 1989], p. 31.

⁵⁵Ibid., p. 9.

⁵⁶[Quine, 1983], pp. 157–160, esp. p. 160: “A maxim of shallow analysis prevails: expose no more logical structure than seems useful for the deduction or other enquiry at hand.” (emphasis original).

⁵⁷[Carnap, 1967], pp. 51–2.

⁵⁸Ibid., pp. 40, 279–282; [Creath, 1990], p. 432.

accomplish precisification and simplification in one particular aspect of our language, *not* precisification of thought or language in general. We will see in the next chapter that this reading is confirmed in Quine's correspondence, too.

3.4 Conclusions

Although Quine and Carnap are not as fiercely opposed as they are sometimes portrayed, they differ substantially in some respects. Regarding the philosophy of language, they can be contrasted with respect to the extent to which (formal) artificial languages can help solve philosophical problems. Quine believes that a canonical notation can only help in certain domains of science and philosophy, used only as needed, whereas Carnap believes that a formal language like Carnap's artificial language can be applied in a broader context.

With respect to artificial languages like Loglan, both Quine and Carnap have their reservations. Carnap would argue that Loglan cannot be perfectly logical, because it has to function as a spoken language as well as a logical language. Quine would concur, and add that the merits of Loglan lie above all in its function as a programming language and as a canonical notation that can be used as needed to clarify ordinary language. In the following chapter, we will see that this view is confirmed when we look at Quine's philosophy of language and its direct influence on the creation of Loglan. Furthermore, we will see that Quine would likely not subscribe to Loglan as a means to test the Sapir-Whorf hypothesis.

Chapter 4

The Quine Connection

Man knows that there are in the soul tints more bewildering, more numberless, and more nameless than the colours of an autumn forest; [...] Yet he seriously believes that these things can every one of them, in all their tones and semi-tones, in all their blends and unions, be accurately represented by an arbitrary system of grunts and squeals.

G.K. Chesterton, *G.F. Watts* (1904)

In this final chapter, we will investigate how Quine influenced the creation of Loglan. We will examine this influence in three ways. First, we will discuss the existing correspondence between Quine and Brown, to get both an indication of the extent of their relation, as well as an understanding of what Quine thought about Loglan. Secondly, we will examine the explicit references to Quine in *Loglan 1*. We will consequently discuss whether the depiction of Quine put forward in *Loglan 1* is correct, and whether Brown adopts the same solutions to problems as Quine himself does. Finally, we will compare Brown's project with Quine's more general philosophy. I will argue that Quine's philosophy cannot be put in agreement with the goals and purposes of Loglan. His remarks on language have been implemented into Loglan, and Brown has understood Quine well, broadly speaking. However, the idea of creating an artificial language as a natural language to test the Sapir-Whorf hypothesis is orthogonal to Quine's philosophical ideas about language.

4.1 Quine and Brown in correspondence

Quine and Brown exchanged letters from 1977 to 1990.¹ Most of these letters were about Quine's 1977 endorsement letter to Prof. Conrad Arensberg. In this letter, Quine spoke highly of Loglan to Arensberg, who recommended Loglan to him. Quine sent a copy of this letter to Brown. Brown subsequently proposed to use Quine's endorsement for several grant applications, and to use his endorsement on the back cover of

¹The Quine Papers at the Harvard University Library, MS Am 2587 I-154 and I-651 hold the correspondence between Quine and Brown, and between Quine and the Loglan Institute. (Appendices A.1 and A.2 respectively) See I-41 for the letter to Arensberg about Loglan (Appendix A.3).

Loglan 1. From Quine's perspective, many of the letters to Brown and the Loglan institute stated his inability to keep up with Loglan,² but he encouraged Brown to use his endorsement, and it appears that Quine had read some of the literature on Loglan that Brown sent him.

It is highly plausible, for instance, that Quine had read most or all of *Loglan 1*, and a paper, 'Paternity, Jokes, and Song', that Brown co-wrote about a possible way in which language could have evolved.³ Quine's reading of Brown's work, along with his repeated permission to use his endorsement letter, suggests that although he might not have had the time to read everything Brown wrote, he did not change his opinion radically with respect to the efforts of Brown. In the letter to Arensberg, Quine listed the merits he sees in Loglan.

Firstly, Quine commended the fact that Loglan makes a distinction only between predicate and subject, and drops the distinction between verb, object, adjective, and so on. The benefit of this choice, "rather passed over by the author," said Quine, is that it accommodates for vagueness. "What are the lower limits of 'short', 'bald'? None; treat these predicates as incomplete occurrences of 'shorter than', 'balder than', 'bluer than'. And so [Brown] does."⁴ This refers to the idea that 'blanu' can function as a one-place predicate, like in *Da blanu* (*X* is blue) or as a two-place predicate, as in *Da blanu de* (*X* is bluer than *Y*). Quine remarked that Brown could have exploited this function further, had he given for instance *Da corta mreanu* (*X* is a short man) the interpretation 'X is shorter than most men' instead of 'X is short for a man'.⁵ Brown indeed did not recognise that this function in Loglan could accommodate vagueness. He argued that the idea of using an 'incomplete predicate' (a predicate where not all arguments are substituted by names, variables or phrases) is a reflection of how nouns and verbs are used in English.⁶ As we have seen, Brown did not care a great deal about semantic vagueness. Instead, he appealed to the intuition of speakers of the language to explain how we should understand metaphors: a blue house is just what we intuitively understand to be a blue house. In Section 4.2.2, we will discuss how vagueness is dealt with in the construction of Loglan and in Quine's philosophy.

Another feature Quine appreciated in Loglan is the "treatment of indirect quotation and other idioms of propositional attitu[d]e."⁷ Recall (Section 2.1.2) that Brown had incorporated particles in the language (*li*, *lu*) that function as quotation marks.⁸ Similarly, Quine wrote that the incorporation of variables and parentheses as particles is "sensible".⁹ He did not give a reason for why this is sensible, but note that in *Word & Object*, Quine also detailed the many merits of the use of parentheses:

A striking case [of simplification of theory] is the use of parentheses. To say of parentheses that they resolve ambiguities of grouping gives little

²Quine to Brown, 25-06-1977; 07-06-1983; 05-10-1988; 30-05-1990.

³[Brown and Greenwood, 1991]. See also Quine to Brown, 14-05-1989, and Quine to Arensberg, 05-07-1977.

⁴Quine to Arensberg, 05-07-1977, p. 1.

⁵See [Brown, 1975], p. 57.

⁶*Ibid.*, p. 43.

⁷Quine to Arensberg, 05-07-1977, p. 1. Originally had 'attitufe'.

⁸See [Brown, 1975], Section 4.8.

⁹Quine to Arensberg, 05-07-1977, p. 2, Quine papers, I-41.

notion of their far-reaching importance.¹⁰

Hence, Quine might have been pleased to notice that Brown had found the same solution as he did.

Quine was critical of some aspects of Loglan, too. First and foremost this concerned the interpretation of the ‘unmodified predicate’. An unmodified predicate is a predicate which stands alone, as in *Da kusfa* (X is a house), in contrast with *Da blanu kusfa* (X is a blue house), where *kusfa* (house) is modified. Brown characterised such predicates as follows:

This [the simple predicate, LM] is the fundamental notion of Loglan grammar. Each predicate word or construction represents a potential claim about the world.¹¹

Quine continued in his letter:

I don’t know what stand to take on this. Philosophically I am averse to the modalities, but they play a dominant role in natural language.¹²

Indeed, Brown interpreted ‘incomplete’ predicates as expressing modal claims. For instance, *Da cabro* means that X is flammable (or that it burns). This idea of potentiality is preserved under the adding of certain modifiers, Brown adds:

For when we use the so-called “present” tense [rather than no tense at all, LM] in these sentences we do not intend to claim that he is swimming now, or that she is dancing now, or that John is flying now, but only that he can swim, she can dance well, and that John does fly to New York when he goes there at all.¹³

We will see in the next section that Brown followed Quine’s scepticism towards modality on this point. Although one can express modalities in various ways in Loglan, Brown refrained from adding modal operators as an expression of modality.

4.2 Brown on Quine

As mentioned above, Brown mentioned Quine explicitly a number of times to justify choices made during the creation of Loglan. Let us now investigate where Brown credited Quine and whether Brown did so correctly.

4.2.1 Modalities

Although nowadays modalities are ubiquitous in logic, in Quine’s days these were not generally accepted, and Quine was a notable opponent of modalities.¹⁴ Brown was apparently convinced by Quine’s reasoning, for he writes:

¹⁰[Quine, 1983], p. 158.

¹¹[Brown, 1989], p. 83.

¹²Quine to Arensberg, 05-07-1977, p. 2.

¹³[Brown, 1989], p. 86.

¹⁴See [Quine, 1983], p. 195ff. See also [Ilesdal, 2006].

I have taken Quine's strictures on modal logics [...] to be sufficient to discourage any effort to incorporate one into Loglan.¹⁵

Although Brown did not incorporate modal operators into Loglan, he did recognise that modalities play a significant role in everyday conversations.¹⁶ There are therefore two ways in which one can express modalities in Loglan.

The first is the use of incomplete predicates, as we have seen in the previous section: *Da blanu* can mean 'X is blue' or 'X is bluer than [something]'. Incompleteness in this sense can also be used in combination with structural words, such as *nu*, *ju* and *fu*. The word *nu*, for instance, exchanges the first and second places of a predicate. Hence, whereas *Djan cluva Meris* means 'John loves Mary', *Djan nu cluva Meris* means 'Mary loves John'. These modifiers can also be used in a sentence in which we *don't* use up all arguments of the predicate, as in

Da nu cluva [something] loves X.

In this case, we would translate this to English as 'X is loveable': a modal claim.

The same holds for *fu* and *ju*, which swap the first and third, and the first and fourth arguments of a predicate respectively. The use of these structural words can lead to subtle differences in modality:¹⁷

Da fu ditca X is teachable (= can be taught something)
Da nu ditca X is teachable (= is a topic capable of being taught)

The second way in which one can express modality is by using the predicates *nerbi* (X is necessary for process Y) and *blicu* (X is possible under conditions Y given knowledge system Z).¹⁸

In conclusion, Brown agreed with Quine that modal operators should not be part of logic, and hence should not be part of Loglan's logical structure, either. However, he did realise that if he wanted Loglan to succeed as a spoken artificial language, he would need to have some possibility of expressing modalities.

4.2.2 Predicate modifiers

A central tenet of Loglan is the ability to combine predicates to form new ones, as we have seen in Section 2.1. Recall that Brown calls the resulting predicate a 'metaphor'. Such metaphors, also referred to as 'modifier-modified predicate pairs', can generally not be treated as the conjunction of the two predicates. To use an example we have seen,

¹⁵[Brown, 1989], p. 306.

¹⁶Note that Brown has created 'modal operators', but these operators are not modal in the usual — logical — sense of the word, as Brown recognises. They are used to indicate the source of the claim a speaker is making, or how something is happening. See [Brown, 1989], p. 224ff; p. 304 fn. 3.

¹⁷See [Brown, 1989], p. 91. I have slightly altered the translations. Note that we do not *need* to interpret predicates as expressing modalities. For instance, *Da cabro* may also mean just 'X burns'. We have seen that this is problematic, according to Zwicky, in Section 2.2.2. But we have also seen a potential solution using different Loglan predicates that express capability.

¹⁸See [Brown and Brown, 1989].

Da gudbi matma

means that X is a good mother, but they might not both be good and a mother, for they might not be 'good' overall.

In a sentence such as

Da redro hasfa *X is a red house*

the word *redro* (red) is not used literally, but metaphorically; red only in as far as X is red for a house. Hence, Brown models a metaphor not as an operation on two predicates, but as an operation that produces a *new* predicate.

To understand how close Brown's and Quine's treatments of these modifier-modified pairs are, let us take a closer look at Quine's treatment of composite terms.¹⁹ He writes

We now turn to a further method of forming composite terms. [...] It is the joining of adjective to substantive in what grammarians call *attributive position*. 'Red' has attributive position in 'red house', as against its predicative position in 'Eliot house is red'. A composite general term thus formed is true of just the things of which the components are both true.²⁰

Note that Quine also appears to believe that the adjective-substantive pair could be regarded as a *new* kind of 'predicate': the 'composite general term'. Brown makes a similar analysis: "[I]n attributive position next to a mass term the adjective must be treated as a mass term: thus 'red' in 'red wine'. The two mass terms unite to form a compound mass term."²¹ With 'mass term', both Quine and Brown refer to a term which 'refers cumulatively'; the term refers to both the entire substance as to parts of it. Hence, 'water' is a mass term, and so is 'footwear'.²²

Crucial for Brown's treatment of terms in attributive position is the Quinean distinction between *syncategorematic* and *categorematic* terms. The former are adjectives which, when combined with a substantive, cannot be analysed as the composite being true of both components, as Quine has described above. For instance, the adjective 'mere' in a 'mere child' is syncategorematic, since a mere child is not both a child and mere. In such cases, a more elaborate explanation is needed, Quine explains.²³ Categorematic adjectives can be analysed as a conjunction, when combined with a substantive term. The adjective 'blue' in 'a blue book' is categorematic, since 'blue book' is both blue and a book.

Brown recognizes this distinction, and attributes to Quine the idea that syncategorematic relationships are "the atypical case of modifier-modified relationship[s]. Quine argues that most modifier-modified predicate pairs can be analyzed as conjunctions, thus that whatever is a red house is both red and a house."²⁴ Brown, however, opposes this view. He believes that predicate pairs that can properly be analyzed as

¹⁹[Quine, 1983], §21, pp. 100–105.

²⁰Ibid., p. 103, emphasis original.

²¹Ibid., p. 104.

²²Ibid., p. 91; [Brown, 1989], pp. 203–4.

²³[Quine, 1983], p. 103.

²⁴fn. 22 of Chapter 3 of [Brown, 1989], which is fn. 17 in [Brown, 1975].

conjunctions are actually rare, and that most of the relationships between predicates are syncategorematic. In Loglan, *all* predicate pairs are viewed as syncategorematic; none can be analyzed as conjunctions.

Quine indeed calls some syncategorematic ‘predicate pairs’ rare cases.²⁵ Quine of course never explicitly writes about predicate pairs, only about adjectives, substantives, et cetera. Yet he does write that syncategorematic adjectives are “exceptions” to the rule that a composite general term construed by joining an adjective and substantive is true of the things of which the components are true.²⁶ The only other case in which the truth of the compound does not imply the truth of the constituents is in the case where two substantives form a compound, where one substantive is in ‘pseudo-attributive position’.²⁷ For example, in the compound ‘water meter’, ‘water’ is not truly an adjective applying to ‘meter’. Quine writes that such compounds “are best seen rather as irrelevantly similar condensations of multifarious phrases.”²⁸ Water rats need have nothing in common with water meters, or water wings, and water meters are not both water and meters.²⁹

It is therefore not clear that Quine believed that *most* modifier-modified predicate pairs can be analyzed as conjunctions. For adjective-substantive compounds this holds true, but it is not true of modifier-modified predicate pairs in general. We should not forget that in Loglan, predicates comprise verbs, nouns, and adjectives (and sometimes entire expressions). Quine, speaking about English and not Loglan, makes a fine-grained grammatical distinction between different kinds of compounds, depending on the (grammatical) properties they have. According to Quine, we may distinguish adjective-substantive pairs from substantive-substantive pairs. For the first kind, the adjective may be a mass term or a singular term. In the second case, the substantive may occur in ‘pseudo-attributive’ position (as in ‘water meter’) or may be used in a truly attributive way (‘iron bar’).³⁰ And ‘syncategorematic’ only applies to *adjectives* that properly combine with a term which “marks out a category of objects in its own right.”³¹ For example, ‘mere’ only makes sense in an expression such as ‘a mere child’. When Brown writes that Quine held that “most modifier-modified predicate pairs can be analyzed as conjunctions”, he thus makes something of a category mistake. Quine does not talk about whether *predicate pairs* can be modelled as conjunctions, only about whether, for instance, substantive-substantive pairs can.

To sum up, although Brown is not completely sensitive to the differences between him and Quine, he correctly characterises their difference with respect the treatment of modifier-modified pairs. Whereas Quine makes clear that (at least) some compounds can be treated as conjunction, in Loglan *none* can. Instead, Brown relies on our ability to interpret metaphors to understand what a modifier-modified predicate

²⁵[Quine, 1983], p. 103.

²⁶Ibid.

²⁷This is not Quine’s terminology. Quine wrote that substantives “also commonly occur in what seems like attributive position”. For lack of a simple, shorter term, I have therefore called these types of substantive-substantive pairs ‘pseudo-attributive position.’ See [Quine, 1983], p. 103.

²⁸[Quine, 1983], p. 103.

²⁹In some cases, like ‘ladybird’, the compound is true of *neither* of the components; a ladybird is neither a lady nor a bird.

³⁰See [Quine, 1983], pp. 103–105.

³¹[Quine, 1983], p. 103.

pair could mean.

4.2.3 Singular and general terms

Brown writes that his distinction between ‘designating’ and ‘predicating’ is very close to Quine’s distinction between ‘singular’ and ‘general’ terms.³² Terms that designate, in Brown’s vocabulary, are very close to Quine’s singular terms; likewise, terms that predicate are close to the general terms.

According to Quine, predication “joins a general and a singular term to form a sentence that is true or false according as the general term is true or false of the object, if any, to which the singular term refers.”³³ The distinction between singular and general terms is one of grammar.³⁴ That means that those concepts are characterised by their grammatical function. A singular term admits only the singular form and no article at all, like the word ‘mama’. A general term admits articles and a plural ending, like ‘apple’.³⁵ Later, Quine characterises the distinction by likening general terms to predicates: “[O]ur study can [...] be simplified by viewing substantive, adjective, and verb merely as variant forms given to a general term.”³⁶ The simple terms then are the things to which the predicate applies: “Predication joins a general term and a singular term to form a sentence that is true or false according as the general term is true or false of the object, if any, to which the singular term refers.”³⁷ Brown’s formulation is indeed close to Quine’s, when he says that

[w]e use the word ‘predicate’ to refer to [the category of predicates], and not more detailed grammatical labels like ‘nouns’, ‘verbs’, ‘adjectives’, ‘adverbs’, and so on, because one of the most surprising things about Loglan grammar is that no sharp distinction can be drawn in it between these several ways of ascribing properties to things.³⁸

For the term ‘designate’ Brown only considers reference to “a unique person, place or thing.”³⁹ In other words, only names and (designating) variables designate, as opposed to predicates (which refer more generally) and non-designating variables (which do not refer). But Brown has added modifiers, *le*, and *lo*, which allow a pred-

³²Brown writes: “Throughout this chapter I will use the word ‘designate’ in the approximate sense of ‘purport to name, identify, or single out’, in a sense that does not entirely accord with either philosophic or linguistic usage. [...]. I am closest, among logicians, to the analyses if not the usages of Quine. The distinction he draws between ‘singular’ terms and ‘general’ ones [...] is very nearly what I take to be the distinction between designating and predicating, though my emphasis is naturally a different one. (For example, I do not think, as Quine does, that the former activity can be eliminated in favor of the latter.)” [Brown, 1989], endnote 1, pp. 201–2.

³³[Quine, 1983], p. 96.

³⁴Ibid.

³⁵Ibid., p. 90.

³⁶Ibid., p. 96.

³⁷Ibid.

³⁸[Brown, 1989], p. 60.

³⁹Ibid., p. 83. Confer e.g. pp. 307–8, endnote 13 and Section 4.30, p. 179ff, for Brown’s use of ‘(non-) designation’. See also p. 274, where Brown remarks that non-designating variables are practically sentence quantifiers, i.e. quantifiers that range over a sentence.

icate, too, to become an argument for another predicate.⁴⁰ In effect, we use those modifiers to transform mass terms (*mrenu*, ‘man’) into singular terms (*le mrenu*, ‘the man’). Likewise, for Quine, general terms can function as singular term, as in ‘lamb is scarce’.⁴¹ In the sentence ‘lamb is scarce’, for instance, we refer to ‘lamb’ as being a portion of the ‘scattered quantity of lamb meat’. Brown has in this respect followed Quine closely, and has adopted the same strategies in dealing with singular and general terms.

4.3 Quine on ambiguities

In Chapter 4 of *Word & Object*, Quine discusses “the referential business of our language”.⁴² This analysis occurs on the basis of vagaries of reference. Referring does not always occur unambiguously, Quine remarks. Like Brown, he makes the distinction between on the one hand ambiguities inherent in a term (such as the ambiguity of ‘bore’ in ‘Our mothers bore us’), and on the other hand ambiguities of a structural or grammatical nature: the *syntactic ambiguities*.⁴³ It would lead us too far astray to treat the ambiguities of terms that Quine mentions here, although they are interesting. Moreover, Brown never attempted to make Loglan lexically unambiguous.

Arguably Loglan should be able to deal with all *syntactic* ambiguities if it is to be grammatically (syntactically) unambiguous, as Brown claims it is. Let us now look at how Brown has drawn inspiration from Quine to attempt to make Loglan free from ambiguities.

4.3.1 Ambiguous syntactical constructions

Quine mentions several ambiguities that are “syntactical ambiguities”. That is, they are syntactical “only in that what are ambiguous are certain constructions.”⁴⁴ Thus, they are not syntactical ambiguities in the strong sense of the word, but they are not exactly lexical ambiguities either. As we will see, Brown appears to have remedied such ambiguities, or explained them away, in the process of creating Loglan. Following Quine, we split this kind of ambiguity into two classes—ambiguities of adjectives, and ambiguities in plurals—and treat them in that order. Subsequently, we discuss Brown’s solutions to these ambiguities.

Ambiguities of adjectives

As we have seen, Quine makes a distinction between *categorematic* adjectives and *syn-categorematic* adjectives. However, not in all cases is it clear what distinguishes the

⁴⁰[Brown, 1989], p. 137 ff. Brown explicitly says ‘just as names may be used to form designations, so may predicates’ (p. 137).

⁴¹[Quine, 1983], p. 98-99.

⁴²Ibid., p. 125.

⁴³Quine calls a word ambiguous if “it has been conditioned to two very unlike classes of stimulations, each a close-knit class of mutually similar stimulations.” ([Quine, 1983], p. 130) The semantic ambiguities, or ‘ambiguities of terms’ as Quine calls them, are treated in [Quine, 1983], §27 (pp. 129–134), syntactic ambiguities are discussed in §28 (pp. 134–137).

⁴⁴[Quine, 1983], p. 135.

two. What distinguishes ‘water wing’ from ‘water vapor’? A water wing is not water, but water vapor *is*.

As we have seen in the previous section, Brown believes that in Loglan, all compound words are syncategorematic. For Brown, this claim is relatively unproblematic: our innate sense of language will tell us what counts as water wings and what counts as water vapour. He praises this kind of ambiguity as a richness of expression, rather than an ambiguity:

Loglan was first shown to be syntactically unambiguous in February 1982. There is still, of course, some ambiguity left in the language, namely the kind by which an old meaning of a word may be extended metaphorically to convey a new one. Indeed, there must be exactly this kind of metaphorical ambiguity in any language if its lexicon is to grow.⁴⁵

Further on in *Loglan 1*, Brown is pleased with the ambiguity that arises through the process of metaphor, too, because it enriches the language:

We suppose that this grammatical freedom in using Loglan modifiers –a freedom that derives from the simple fact that all its predicates belong to a single part of speech– will lead to a great richness of metaphor in Loglan; and that this in turn may be related to the process of insight-formation, in any language.⁴⁶

Note that Brown uses ‘grammatical freedom’ not to indicate that we allow grammatical ambiguities, but to signify that we have some freedom in a grammatical construction: the metaphor construction.

In this respect, Brown has thus departed from Quine, and has chosen a different approach that more nearly accords with Loglan’s function as a richly expressive spoken language, rather than a logical language.

Ambiguities in plurals

In Loglan, there are no plurals. Variables may stand for both a singular term and plural terms. Predicates, likewise, may designate both a single, particular, object, and a collection of objects.⁴⁷ In most natural languages, however, such a distinction does exist. Plural nouns in English are subject to many different interpretations, Quine remarks. Let us first sum up the different functions a plural can have for Quine:⁴⁸

1. The plural form works like the singular form of “every”.
2. The plural form has an implication of plurality, but refers to only a specific subset of the extension of the general term.

⁴⁵ [Brown, 1989], pp. 13-4.

⁴⁶ *Ibid.*, p. 97.

⁴⁷ Brown writes: “Even the most countable things can be massified, and the most uncountable things particularized; for Loglan does not divide the world up this way [e.g. the way English does, LM].” [Brown, 1989], p. 141. The fact that Loglan does not have a distinction between singular and plural is not terribly explicit in Brown’s writings, but it was confirmed by Randall Holmes that this is what Brown had in mind (personal correspondence to the author, 16-04-2018).

⁴⁸ [Quine, 1983], p. 134.

3. The plural form works like the (abstract) singular term designating the extension of that term.
4. The plural form has an implication of plurality, but refers to an ‘unfocused’ subset of the extension of the general term.
5. The plural form is used dispositionally.

Let us treat these interpretations in order, to see how Loglan may deal with such cases.

As Quine indicates, in the first case the plural form works like ‘lions’ in ‘Lions eat meat’.⁴⁹ What we mean when we say that lions eat meat, is that every lion eats meat. Hence, says Quine, such plurals are easy to disambiguate in English (by adding ‘every’). This solution is available in Loglan too:

Ra simbu ga miotci.

Here, *ra* stands for ‘all’ or ‘every’, *simbu* means ‘X is a lion/are lions’, and *miotci* is a compound predicate meaning ‘X is a meat-eater’, constructed from *mitro* (X is meat from animal Y) and *titci* (X eats Y). The word *ga* could be translated as ‘such that’.⁵⁰ The whole sentence thus means ‘All lions are such that they meat-eat’.

In the second case, plurals “do the work” of a singular term, such as ‘lions’ in ‘I hear lions’. One might precede such terms with ‘a(n)’ or ‘some’, Quine remarks.⁵¹ We do not refer to *all* lions, but to a subset of all lions. Brown’s Loglan alternative for ‘I hear lions’ is

Mi hirti simbu.

Mi means ‘me’ or ‘I’, *hirti* stands for ‘X hears Y’ and, again, *simbu* stands for ‘lion’ or ‘lions’. Thus the sentence expresses that I hear lions. Loglan has no distinction between singular and plural (there are no nouns, after all), so *simbu* might refer to one lion or to a multitude of lions.

In the third case, plurals designate an abstract singular term, such as ‘lions’ in ‘Lions are disappearing’. We do not intend to say that *all* or *individual* lions are disappearing, as in the first two cases, but that the *species* of lion is disappearing. Hence ‘Lions are disappearing’ may be translated as

Lo simbu ga vijkaa.⁵²

Here, *vijkaa* means ‘X disappears from the sight of Y’, and *lo* serves as a mass term operator, which applies to predicates and could be translated as ‘the individual composed of all things which are’ [insert predicate here].⁵³ Hence, the whole sentence literally would mean ‘The mass-composed-of-lion is such that it-disappears.’ It seems to

⁴⁹All example sentences are after [Quine, 1983], p. 134. Interestingly, Brown treats (more or less) the same examples in his [Brown, 1989], pp. 183-4. Whenever possible, I will use the Loglan translations that Brown uses. Whenever I constructed my own translation, this will be explicitly mentioned.

⁵⁰see [Brown, 1989], p. 150ff for *ga*. See p. 183 for Brown’s example. He gives alternatives, too, on the same page. These spell out the universal quantifier more, but they express the same thing, Brown remarks.

⁵¹[Quine, 1983], p. 134.

⁵²This translation is not given by Brown, but is confirmed by Randall Holmes in correspondence with the author, 12-04-2018.

⁵³[Brown and Brown, 1989].

me that *lo* is added to Loglan just to do this job of demarcating the difference with the above second case of plural use. To see this, consider Quine's elaboration on this type of plural:

[The plural] does the work of an abstract singular term designating the *extension* of the general term (i.e., the class of all the things of which the general term is true)⁵⁴

Similarly, Brown writes that

lo batra, *lo cutri* and *lo humni* designate just what the English words 'butter', 'water' and 'man' designate when used without articles, namely those three massive, widely distributed but discontinuous individuals composed respectively of all the butter, all the water, and all the human beings there are.⁵⁵

Both Quine and Brown treat this kind of plural as an singular, abstract term that refers to its extension, the "widely distributed but discontinuous individuals" that constitute the reference of the abstract term.

In the fourth case, plurals do not refer to all objects of which the term is true, or even to a specified subset. Plurals merely denote some undetermined subset of the extension of the general term, such as in the sentence 'Ernest is hunting lions'. Ernest is not hunting specific lions; he is merely intending to shoot *some* lion(s). The vagueness here lies in the verb 'to hunt', Quine remarks.⁵⁶ He solves this case with the help of the concept of opacity. This concept is worked out in detail by Quine, but in summary it comes down to this. In some constructions, most notably in constructions using quotation marks, words do not refer straightforwardly, but in an 'opaque' way.⁵⁷ In our example, 'hunting lions' does not transparently mean that one is hunting lions, but that one is on the lookout for one or more lions to shoot. Quine solves this opacity in verbs by rephrasing. There are two possible alternatives, which express a subtle difference in scope, he contends:

Ernest is endeavoring (-to-cause) himself to shoot a lion.
Ernest is endeavoring (-to-cause) himself and a (certain) lion to be related as shooter and shot.⁵⁸

Brown has not dealt with this kind of ambiguity in *Loglan I*, but it appears that he could use the same kind of reasoning that he used for other semantic ambiguities. Since this ambiguity resides in the opaque meaning of a verb, Brown would count this as an instance of semantic ambiguity, not syntactic. As before, Brown's answer would supposedly be that this type of ambiguity is an asset of Loglan, not something that should be eradicated. If it leads to problems, different predicates can be used or, if needed, created.

⁵⁴[Quine, 1983], p. 134, emphasis original

⁵⁵[Brown, 1989], p. 140, emphasis original.

⁵⁶[Quine, 1983], p. 134.

⁵⁷Ibid., p. 144ff.

⁵⁸Ibid., p. 155.

The last case are plurals which accompany a dispositional verb, such as ‘Tabby eats mice’. That means that Tabby (a cat) is disposed to eating mice regularly, not that she eats some particular (set of) mice. Brown has not dealt with this ambiguity of plurals explicitly, but there does exist a predicate that expresses disposition: *dakbiu* (‘X is licenced/disposed to do Y’). Hence, we might translate ‘Tabby eats mice’ as

La Tebis, dakbiu lepo ba ji musmu goi Tai titci ba

Recall that in Loglan, names are also ‘translated’; hence Tabby becomes La Tebis, according to the rules for creating names.⁵⁹ The word *lepo* signals that a new subclause or sentence starts, much like ‘that’ in English. *Titci* means ‘to eat’ and *musmu* means ‘mouse’; *ji* means ‘which’ or ‘namely’. Lastly, *Tai* means ‘T’ and refers back to Tabby (La Tebis).⁶⁰ The full sentence thus means literally

Tabby is disposed to (do) something, namely (to) mice: T(abby) eats some (of them).

and in better English:

Tabby is disposed to eating mice.

The sentence is slightly complicated in Loglan because we need to demarcate the scope of *lepo* explicitly here, using *ba ji*.

4.3.2 Ambiguity of reference

Let us now turn to the properly syntactic ambiguities that Quine treats in *Word & Object*. The ambiguity of pronominal reference is the first that Quine mentions. This form of ambiguity is associated with words such as ‘it’, ‘he’, ‘that’, as for instance in

Everything has a part smaller than it.⁶¹

In this case, it is not completely clear whether ‘it’ refers to ‘everything’ or ‘part’, or even to something else in the context given previously.⁶² One might solve this ambiguity by transforming the pronouns into words with a more definite meaning (e.g. ‘first’, ‘second’, ‘former’, ‘latter’, etc.) Quine remarks that mathematicians use a different method: substituting variables for pronouns, as in

Everything *X* has a part smaller than *X*.

Brown’s solution of using ‘non-designating variables’ (*be*, *ba*, *bu*, *bo*) is thus close to Quine’s. Translated to Loglan, the two first interpretations of the ambiguous sentence are as follows:

1. Ra ba be goi be parte ba ice be cmalo ba.
2. Ra ba be goi be parte ba ice be cmalo be.

Here, *goi* is used to mark the quantifier (*Ra ba be*) off from the rest of the sentence. The predicate *parte* means ‘X is a part/portion/segment/piece of Y’⁶³ and *cmalo* means ‘X

⁵⁹[Brown, 1989], 2. 15.

⁶⁰[Brown and Brown, 1989].

⁶¹[Quine, 1983], p. 135.

⁶²See also [von Heusinger, 2002], p. 113.

⁶³[Brown and Brown, 1989].

is smaller/littler/lesser than Y .⁶⁴ In these two sentences, it becomes completely clear what the ‘it’ refers to (*ba* in the first case, *be* in the second). In case ‘it’ refers to something previously mentioned, we can use letters as variables to refer back, as we have seen in previous examples. If ‘it’ refers to, say, the universe (*rara*), then we might refer to back to it using *rei*, Loglan for the letter *r*.⁶⁵ These kind of solutions are ones Quine might endorse, too, as using *ba*, *be* and letters such as *rei* works equally well as using mathematical variables to solve the ambiguity.

4.3.3 Ambiguity of grouping

Ambiguity of reference is not the only type of syntactical ambiguity, according to Quine. Another is the ambiguity of grouping, as in the case

pretty little girls’ school⁶⁶

Is this a school for pretty little girls? Or is it a girls’ school which is rather small? Or perhaps a pretty school for little girls? Brown mentions there are “at least four equally legitimate grammatical interpretations” of this sentence in English,⁶⁷ and nine interpretations which can be expressed in English.⁶⁸ His solution of dealing with these ambiguities is the use of the little words *ge* and *ce* (the interpretation of ‘pretty little girls’ school’ as a school for quite small girls being *bilti cmalo nirli ckela* in Loglan).⁶⁹ The word *ge* means ‘for a’ or ‘such that’; *ce* means *and* (used for mixing predicates⁷⁰). When no such markers are used, every predicate is supposed to apply only to the next one. Thus, ‘pretty’ modifies ‘little’ to form a new predicate, meaning ‘moderately small’. This new predicate in turn modifies the next, generating a next predicate, and so on. Without any markers, ‘pretty little girls’ school’ therefore refers to a school for girls who are moderately small. Brown remarks that in Loglan, with the help of these markers, we can distinguish more interpretations than is possible in English. Take for example,

Bilti ge ce cmalo nirli ckela

Bilti means ‘pretty’ or ‘beautiful’, *cmalo* stands for ‘small’, *nirli* means ‘girl(s)’ and *ckela* means ‘school’. This phrase means it is both a school for pretty girls—due to *ge*—and a small school for girls. This, says Brown, is hardly what one could mean when one utters the phrase ‘pretty little girls’ school’ in English.⁷¹

⁶⁴[Brown and Brown, 1989].

⁶⁵[Brown, 1989], p. 134

⁶⁶Quine uses the example ‘pretty little girls’ camp’ ([Quine, 1983], p. 137), but I changed his example slightly to accord better with Brown, who treats this example in far greater detail than Quine.

⁶⁷[Brown, 1975], p. 59.

⁶⁸See [Brown, 1975], Appendix A.

⁶⁹*Ibid.*, p. 267. See also [Brown, 1989], pp. 108–112.

⁷⁰See [Brown, 1989], § 3.16, p. 106ff

⁷¹Note that in English, the word ‘pretty’ can mean both ‘beautifully’ and ‘moderately’. Brown has chosen to translate ‘pretty’ only as ‘beautifully’. He remarks that “[t]his accounts for most of the incidental semantic differences between the English and Loglan entries on some lines of the table [with all the possible interpretations of ‘pretty little girls’ school’, LM], but in no way affects the structural identity of the expressions occurring on those lines.” ([Brown, 1975], pp. 267–272.) With ‘affecting the structural identity’, Brown possibly refers to the idea that Loglan is *syntactically* unambiguous, but not *semantically* unambiguous.

This last example expresses a *logically* possible interpretation of ‘pretty little girls’ school’, but not an interpretation one could express in English, Brown says. That would mean that Loglan would be able to express more than English, due to its logical structure. At the same time, one could argue that English is perfectly able to express this possibility, as I have done above. Interestingly, to some extent Brown seems to realise this, because he includes a possible English expansion of the sentence in his table of all possible interpretations. For some alternatives, however, he simply writes that ‘no clear example has been found’.

Quine’s solution is rather close to Brown’s: he argues that such cases of ambiguity can always be avoided by using pause and emphasis in speech, or otherwise by rephrasing.⁷²

4.3.4 Ambiguities of scope

In some sentences, Quine remarks, it is not clear what the scope of adjectives is. This type of ambiguity is rather similar to the ambiguity of grouping. It arises in the case of categorematic adjectives, as for example with ‘big European butterfly’.⁷³ Does this refer to a butterfly that is part of the ‘big European’ type of butterflies? Or is it a big specimen of the European butterflies? Quine remarks that this kind of scope ambiguity can be solved easily by rephrasing.⁷⁴ Brown might say that Loglan has similar devices to deal with such ambiguities, such as the aforementioned *ge* and *ce*.

Other ambiguities of scope are more persistent, as in the case

I believe he saw a letter of mine.

Quine solves these kinds of ambiguities by pointing out that we can use a ‘such that’-construction to explicate which interpretation we mean:

1. I believe that some letter of mine is such that he saw it.
2. Some letter of mine is such that I believe that he saw it.

He takes the lesson of such examples to be that “an indefinite singular term outside an opaque construction [should] not bind a variable inside the construction.”⁷⁵ Recall that opaque constructions occur whenever words do not refer straightforwardly (or ‘transparently’, as Quine would say). In this example, the scope of the indefinite singular term, ‘a letter’, is opaque. It might refer to any letter, or to one specific letter. We can regain transparency, on the condition that we take the lesson (or ‘maxim’) above to heart. In 1 and 2, the indefinite singular term, ‘some’ does not bind a variable inside the opaque construction, the phrase starting with ‘such that’.

How does Brown deal with such ambiguities? In Loglan, these kind of ambiguities will be sparse. This has to do with the fact that the scope of a predicate is always

⁷²[Quine, 1983], p. 137. Interestingly, Brown also uses pauses and emphasis in his table, see [Brown, 1975], pp. 268–271, column (v).

⁷³[Quine, 1983], p. 138.

⁷⁴Ibid.

⁷⁵Ibid., p. 148.

determined. The number of arguments of a predicate is set, and they occur in a determined order (that is, if we refrain from using certain structure words such as *nu* or *ju*). In cases where many predicates are modifying each other, as in *pretty little girls' school*, disambiguation can also happen through the use of *ge* and *ce*, as we have seen. Thus, in extreme cases of ambiguity, Brown ultimately adopts the same solution as Quine; to use a 'such that' construction.

Let us examine a translation of 'I believe he saw a letter of mine' in Loglan, as an example of how disambiguation works in Loglan. The verb 'to see' can be translated as *kanvi* (lit. 'to perceive X visually against Y').

(a) Mi krido lepo da kanvi su lerci ba mi

(b) Mi krido lepo da kanvi le lerci ba mi⁷⁶

The word *krido* means 'X believes Y to be true of Z'; *lepo* means 'that', and *mi* means 'me'. The difference between the two interpretation is emphasised by the use of *su* and *le*. *Su* means 'some/at least one of ...', and *le* is just a definite article, singling out a *single* letter. Sentence *a* thus corresponds to sentence 1 above, and sentence *b* to 2.

4.4 The philosophy of Quine and linguistic relativity

In *Word & Object*, Quine remarks that

One frequently hears it urged that deep differences of language carry with them ultimate differences in the way one thinks, or looks upon the world. I would urge that what is most generally involved is indeterminacy of correlation.⁷⁷

It need not be the case that different languages involve having different worldviews, Quine believes. Instead, he remarks, the further away a language is from our native tongue, and the less close to conditioning to non-verbal (sensory) stimuli a sentence is, the harder it is to make sure a translation is correct.⁷⁸ That is, translations of sentences about mathematics are harder to verify than translations of sentences about apples. Likewise, translations from Guugu Yimithirr to English will also be harder to verify than translations from Frisian to English. Hence, in such cases it will also be harder to attribute to a person, or a culture even, a certain worldview. We cannot go outside our conceptual framework to investigate what the differences are in worldview between one culture (one group of language-speakers) and the next, according to Quine. This view, I believe, is connected with Quine's thesis of the indeterminacy of translation.

The thesis of indeterminacy of translation does not express that it is difficult to see what translation should be associated with the expressions of someone else. Rather, we have *no* complete access to a translation from any language, even our own. We can only construe some translation relative to our own point of view (or conceptual

⁷⁶This translation was confirmed by Randall Holmes, private correspondence to the author, 08-03-2018.

⁷⁷[Quine, 1983], pp. 77-8.

⁷⁸Ibid., p. 78.

scheme, in Quine's terminology).⁷⁹ Quine argues that it is theoretically possible that a sentence (or rather, group of sentences) has multiple different translations, and that we will never be able to find out which one is correct.⁸⁰ Verification of translation namely relies on the assent or dissent of natives to certain utterances. It is theoretically possible that these patterns of assent and dissent can fit multiple, significantly different translations.

If we follow Quine, we cannot reliably translate all sentences of native speakers of other languages. The translation we make is constructed from within our own conceptual scheme; there is no objective venture point outside of our language from which we can construct an objectively valid translation.⁸¹ Of course, we may develop a decent and satisfactory translation in practice.⁸² The fact that we *do* understand people who speak other languages is due, says Quine, to the fact that we share our environment with them:

[T]here are many basic features of men's ways of conceptualizing their environment, of breaking the world down into things, which are common to all cultures. [...] As long as we adhere to this presumably common fund of conceptualization, we can successfully proceed on the working assumption that [speakers of two different languages], observed in like external situations, differ only in how they say things and not in what they say.⁸³

Hence, practically speaking, there is no issue with translation, especially in case we are translating sentences whose meanings are strongly dependent on observational data. As we move from sentences that are about empirically observable matter to highly abstract sentences, it becomes increasingly difficult to translate such sentences reliably. For hypotheses about such abstract sentences cannot directly be tested against linguistic, observational evidence. Hence, as we progress towards the abstract, "the lexicographer comes to depend increasingly on a projection of himself, with his Indo-European *Weltanschauung*, into the sandals of his [...] informant."⁸⁴

If we follow Quine along these lines, we might say that he would have believed that absolute confirmation or refutation of the Sapir-Whorf hypothesis is out of reach. One might put this point more succinctly by saying that according to Quine, the Sapir-Whorf hypothesis falls victim to itself. If speakers of different languages really think differently, how are we ever to know? For we, as speakers of our respective languages, already think in a certain —different— framework. In practice, because we can rely on observational behavioural data, we might be able to posit or reject some Whorfian effects that only concern those parts of language that are about observable phenomena.

Even if we grant this practical approach to the Sapir-Whorf hypothesis, we may still encounter problems. In *Meaning in Linguistics*, Quine writes

⁷⁹ Davidson even argues that conceptual schemes are the same as languages, see [Davidson, 1973].

⁸⁰ See [Kirk, 2006] and [Lindahl, 1999], p. 167ff.

⁸¹ [Quine, 1983], pp. 79, 275–6.

⁸² Viz. Quine's principle of charity. See [Quine, 1983], p. 59.

⁸³ [Quine, 1953a], p. 62.

⁸⁴ *Ibid.*, p. 63. Quine assumes here that the person who does the translating and hypothesising is a native speaker of English. Note that according to the theory of radical translation, there is no access to some absolute 'Indo-European *Weltanschauung*', but we might establish such a world-view practically.

[T]he more important difficulty [of translation] is that, as Cassirer and Whorf have stressed, there is in principle no separating language from the rest of the world, at least as conceived by the speaker. Basic differences in language are bound up, as likely as not, with differences in the way in which the speakers articulate the world in itself into things and properties, time and space, elements, forces, spirits, and so on. It is not clear even in principle that it makes sense to think of words and syntax as varying from language to language while the content stays fixed.⁸⁵

It is worthwhile to analyze this paragraph a little further. First Quine states that there is no principled difference between language and the conception of the rest of the world (what we have called 'world-view'). Directly after, he says it is 'as likely as not' (i.e. probable) that differences of language correspond to differences in the way we structure the world (I take this to be a reiteration of 'world-view'). This is an extremely weak version of the Sapir-Whorf hypothesis, if it is one. Quine merely says that language articulates how one views the world, how one 'carves it up' into objects, elements, forces, et cetera. Quine says, in other words, that your world-view is reflected in the language you speak. This is something entirely different from saying that language *influences* your world-view.

This, then, is the departure from Whorfianism. Unlike Brown, and to some extent Carnap, Quine believes that the total world-views of speakers of different languages can not be observed from a kind of objective, 'absolute' standpoint. Hence, it is extremely difficult, if possible, to compare world-views of speakers of different languages. Whorf, on the other hand, *assumes* that we can; otherwise, how could he even formulate his hypothesis? This difference would also imply that Whorf (and Brown) would believe that we can test whether different languages influence the world-views of speakers of different languages. As we have seen, if we extend a little from Quine's writings, we might say that he would not have unreservedly believed that testing the Sapir-Whorf hypothesis were possible. Only in some highly empirical domains, Whorfian effects may be observed —or not—, and even then it will be hard to determine whether these effects are due to language only or have a cultural dimension too.

Crucially, this implies that Quine would not believe that testing the Sapir-Whorf hypothesis using Loglan is possible. I take this interpretation to be present, too, in Quine's letter to Arensberg:

For let us recall that this whole staggering Loglan enterprise is purportedly an experiment to test the Whorfian hypothesis. Viewed thus, it is an experiment of roughly the dimensions of Apollo 11. Happily there are fringe benefits.⁸⁶

The phrase "Happily there are fringe benefits" suggests that Quine did not think that Loglan could without constraint fulfil its promise of being an experiment to test the relativist hypothesis, but that there are enough benefits to make the exercise worthwhile. The work that would be needed to be done in order to make Loglan effective is

⁸⁵[Quine, 1953a], p. 61.

⁸⁶Quine to Arensberg, 05-07-1977, see A.3. Although Quine used two Is to write Apollo II, it is much more likely that Quine refers to Apollo 11, not Apollo 2.

enormous, and therefore the chances are slim that this work would ever be completed. The benefits that make the enterprise worthwhile could be the use of Loglan as a programming language, and perhaps also as an approximate realisation of a Quinean ‘canonical’ scientific language.

4.5 Conclusions

In conclusion, we can say that Brown must have read *Word & Object* closely, and that he has taken much inspiration from it. Many of Quine’s solutions to ‘vagaries of reference’ are the same as Brown’s solutions to ambiguities in natural language. We must acknowledge, however, that Quine’s goals with the disambiguation of such vagaries is different from Brown’s.

In *Word & Object*, Quine discusses the possibility of disambiguating natural language in order to arrive at a canonical notation, which would be useful when problems with language occur in philosophy and science. All disambiguation, therefore, although strictly speaking a departure from natural language, is for Quine a way to show that scientific enquiry is possible using such a canonical form:

In relation to the concerns of this book, those departures have interested us less as general aids to communication than as present aids to understanding the referential work of language and clarifying our conceptual scheme. Now certain[ly] such departures have yet a further purpose that is decidedly worth noting: simplification of [scientific] theory.⁸⁷

Philosophical analysis of language thus has a very specific goal for Quine: that of clarifying and simplifying scientific enquiry, and by extension philosophy. Brown, on the other hand, sees disambiguation as a precondition for the possibility of Loglan. Only if the grammar (syntax) of Loglan is entirely free from ambiguity can Loglan properly be called logical. Although Quine and Brown are very similar in how they deal with vagaries, their purposes with this disambiguation are hence quite different.

From an analysis of Quine’s philosophy—especially Quine’s remarks on the impossibility of translation and conceptual schemes—and from the correspondence between Quine and Brown, it becomes clear that Quine would not have had unconditional faith in the use of Loglan as a test for the Sapir-Whorf hypothesis. Quine might have considered Loglan a praiseworthy enterprise because of its careful implementation of Quine’s remarks on ambiguity, singular and general terms, and predicate structure. The very idea, however, that we can unrestrictedly test the Sapir-Whorf hypothesis using Loglan cannot be made consistent with Quine’s indeterminacy of translation hypothesis.

⁸⁷[Quine, 1983], p. 158.

Conclusion

In this thesis, I have shown how philosophical ideas can inspire and influence the creation of artificial languages. More specifically, we have seen how W.V.O. Quine has influenced the construction of the logical language Loglan, created by James Cooke Brown. This topic has been approached from quite a wide angle. First, we have examined how artificial languages have functioned as philosophical tools.

It became clear that artificial languages have been used as a tool for doing philosophy for a long time. In the seventeenth century and in the twentieth century, linguistic turns have occurred as interest in creating artificial languages as a means to clarify philosophy and to solve philosophical problems arose. Loglan is an extension of these efforts, being a tool for testing the Sapir-Whorf hypothesis, which roughly says that language influences thought. If Loglan were significantly more logical than natural languages, it was thought, and if the Sapir-Whorf hypothesis were true, then we would be able to measure some effect in the logical abilities of speakers of Loglan. Loglan could even have some other applications, such as being an international auxiliary language, and a means to computationally translate between different natural languages.

Loglan has not been without its critics. Zwicky, Dillon, and Freudenthal have criticised Loglan on various points. Their criticisms, however, have almost all been solved by Brown in later stages of Loglan, or have arisen out of a misunderstanding about Brown's goals with Loglan. The only comment that remains valid is the observation that Brown is not very clear about how he intends Loglan to function as a test for the Sapir-Whorf hypothesis, and about what would comprise a pass of such a test. This vagueness licenses an interpretation of Brown as assuming the Sapir-Whorf hypothesis in some passages of his writings. Although making this assumption is rather objectionable, it is not fatal to Brown's goals, because the passages where he seems to assume the Whorfian hypothesis are not an integral part of the structure of Loglan.

Such criticism is about how Loglan is structured in order to meet its goal of testing the Whorfian hypothesis. One can also criticise Loglan on the basis that testing that hypothesis using an artificial language is misguided in the first place. Such a stance would be in line with Quine's philosophy of language and the correspondence with Brown. Quine's principle of the indeterminacy of translation expresses the idea that we cannot in principle decide between different translations which accord with empirical evidence in the same way. The indeterminacy of translation implies that we cannot 'escape' our own conceptual scheme. We cannot compare different languages from a bird's-eye view, as it were. But the possibility of such a comparison

forms the basis of creating Loglan, or any test of the Sapir-Whorf hypothesis. Hence, Quine could not have believed Loglan was perfectly adequate for testing the Sapir-Whorf hypothesis.

That does not mean that Quine would reject the use of Loglan as a philosophical tool across the board. He has written that Loglan could be used as a programming language. Such a use of artificial languages conforms with Quine's view of artificial languages and canonical notations. Artificial languages, Quine writes, can be of use in specific cases, to clarify and simplify scientific and philosophical theories. It seems, therefore, that Quine's stance towards Loglan can be compared to his stance towards Carnap's artificial languages. For Quine criticised Carnap, too, on the basis that he attempted to reform the entirety of science in one fell swoop, something Quine does not deem possible. Quine would say that we cannot use logical artificial languages such as those of Carnap and Brown across the board. His stance is more practical. Artificial languages can be useful in certain circumstances that call for clarification and simplification. We may summarise his stance, as Quine himself does, through the words of Adolf Meyer: "Where it doesn't itch don't scratch."⁸⁸

⁸⁸[Quine, 1983], p. 160.

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Appendices

Appendix A

The Correspondence letters

All letters are sorted by date. Reprinted with kind permission from Douglas B. Quine, PhD, W.V. Quine Literary Estate.

A.1 The correspondence between Quine and Brown

The Loglan Institute, Inc.
1701 N.E. 75th Street
Gainesville, Florida 32601

9 Nov 88

Dear Prof. Quine: —

Thank you for renewing your permission to quote from your '77 letter. I will shorten the excerpt as you require and also send you proof of the new back cover — where it will reside with some quotations from other economists — and let you have a final look at it.

I'm enclosing a more recent version of the '85 paper on "Paternity, Jokes & Song." We're thinking of making a book of it, the commentators and ourselves, and if after reading (over)

- 2 -

it, you'd like to add your
comments, we'd be glad to
have you join us. You
were once vitally interested
in these kinds of problems,
and it is possible that
our proposed solutions to
some of them will evoke
some thoughts from you.

Sincerely,

James C Brown

P.S. I'm presenting the PJS
Scenario to a European
Conference on the Biology
of Language this December.
This ought to generate an
even broader range of
comment. JCB

Dr. James Cooke Brown

May 14, 1989

Dear Dr. Brown:

I much admire "Paternity, Jokes, and Song." It is bold, imaginative, resourceful, and exciting. And it is clearly the fruit of much critical thinking and patient research.

I worried, ^{though,} at the beginning of page 29, ^{where} syntax-free successions of two-word sentences a viable medium for "cultural legends"?

At the end of page 37, where you cite Dawkins, I thought of Ernst Schrödinger's What Is Life?, where he represented us as survival devices for our genes.

I grieve over your ever-recurring 'sapienization'. Krantz is to blame. But that's no excuse. There is no such stem as 'sapien'. The ~~stem~~ participle is sapiens, -entis, stem sapient-. Read sapientization.

I was ~~initially~~ outraged eight years ago by Funsden and Wilson's 'culturger', which you take ~~without~~ on page 37 without flinching. I expostulated to Ed Wilson at the time. I can't expect everyone to have the rudiments of a classical background, but one could easily check ~~ones~~ coinages with a colleague who has.

Finally, ~~these~~ ever more trivial complaints. Most of the very numerous occurrences of 'neurotopically' could give way more appropriately and briefly, I feel, to 'neurally'. All of the numerous occurrences of 'millennium' and 'millennia' are misspelled. With thanks for a rich & rewarding experience,

Somewhere you coin 'particularization'; ~~read~~ 'particularization'.

Dear Prof. Quine:

I'm glad you enjoyed our scenario. I thought you would, as did a former student of yours (Bill Shulz, now a mathematician at Northern Arizona U) who urged me to send it to you when he learned of it, as it's a problem the formal dimensions of which have exercised you from time to time.

Still, I was quite unprepared for the warmth of your praise. It made my (and Greenwood's) day.

I'm sending you a complimentary copy of the 4th Edition of Loglan 1, which is printed now. ~~where~~ ^{30k} your reaction to the 3rd graces the back-cover. I hope ~~th~~ ^{CR} that eventually you'll have time to look at it.

Thanks again for taking the time to let us know how our scenario struck you. Hockett, too, thinks it has some merit.

Cordially yours,

Jim Brown

Jim Brown

16 July 89

THE LOGLAN INSTITUTE, INC.
A Non-Profit Research Corporation
1701 Northeast 75th Street
Gainesville FL 32601
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Office of the Chairman

5 February 90

Phone: (904) 371-9574

Profs. W.V. Quine & C.F. Hockett

Dear Profs. Quine & Hockett

Both of you gave Greenhood and me the inestimable satisfaction of enjoying our "Paternity, Jokes and Song" scenario last year and perceiving it as an argument of some merit, as well as letting us know that you had. We've thanked you both for that thoughtfulness, and this letter asks for advice and possibly also for your backing and/or participation in the next stage of the Scenario project now that our original plan to publish it as part of the proceedings of a Polish Conference on the Biology of Language (where the annotated version you've both seen was given in December 1988) appears to have been abandoned.

What we are thinking now of doing is making a little book of it, adding the thoughts of two or three additional commentators (for example, yours), our responses to them, and a summary statement--from ourselves and any others who cared to join us in it--as to where the PJS hypothesis appears to stand now. We would offer this little book to an American scientific publisher; and which ones might be best to approach with it is something we'd like your advice on.

By way of background, at the times we wrote you last, Greenhood and I were confident that our Polish hosts at the December 1988 Poznan Conference would be able to carry out their commitment to publish the proceedings, and so had felt the project to be neatly consummated. We planned to do nothing further with the PJS Scenario beyond seeing it into print; other commitments had banished all thoughts of doing a longer, more popular book, attractive as that prospect seemed given other lives. Moreover, since ours was going to be by far the longest--and some would say the most controversial--contribution to the Poznan proceedings, Prof. Jacek Fisiak, our principal host, had gone out of his way to give us the assurance that it would certainly be included...even to the extent of consenting to include the remarks of a late commentator (the University of Washington linguist, Carol Eastman) and our response to them as addenda to an already lengthy contribution.

But alas, the otherwise auspicious events in Eastern Europe seem to have pushed our and Fisiak's little project into the fiscal background. Letters get no response from him. He is, we know, no longer Minister of Education. We trust he has returned to the Poznan University Institute of English of which he had so long been head, but he does not even respond to inquiries sent to him there. We have not given up, of course; but do feel that it may be time to make other arrangements for the PJS scenario.

What do you think of the little book idea? We would be most happy to include assessments of the scenario, long or short, from either or both of you, and to include either or both of you as co-authors/signatories of a where-it-stands piece at the end, as well, of course, as to listen to your counsel as to how best to proceed.

Cordially yours,

Jim Brown

James Cooke Brown

C: Bill Greenhood

*the parser runs on (insert) any home computer.

Willard V. Quine

21 May 1990

Dear Prof. Quine:

I've been reading your The Time of My Life with great pleasure. Thanks for writing it. It will inspire many.

On p.257 you mention a 1970 discussion between Geach and McCawley on applications of logical models to grammar writing; apparently a disappointing one as the linguists did not pick up on the idea.

I wonder if you knew that, in 1982, we completed the first formal Loglan grammar that was unambiguous and that it was based solidly on the predicate-argument structure of Loglan?

The current grammar is much richer of course, but has these same formal characteristics. If you'd like to see it, I'd be pleased to send you an '87 version as well as a current parser that exhibits the logical structure, complete with scope representations, of any Loglan utterance it is asked to parse. Is your computer, if any, IBM or Mac? JCB

CARD

May 30, 1990

Dear Dr. Brown,

Thanks for the kind words.

Regrettably, I've been ~~so~~^{so} snowed under
with demands & projects ~~that~~ ~~that~~ I can't keep up
with Loglan. Nor do I have a computer!

Best wishes,

W. V. Q. —

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5 June 90

Phone: (904) 371-9574

Prof. W. V. Quine
Dept. of Philosophy
Emerson Hall
Harvard University
Cambridge, MA 02138

Dear Prof. Quine:

I quite understand your reluctance to commit yourself to writing a commentary on the PJS Scenario...or so I've assumed is the meaning of your silence. Busy-ness with commitments that won't quit seems to be the occupational disease of "retired scholars" (if that really is what we are). I've heard from Hockett, and he hasn't time either, being in the midst of revising his book on language origins, *In Search of Jove's Bow*, in which he apparently plans to discuss our idea. We look forward to that, of course.

Still, your decisions deprive Greenwood and me of the fun of seeing your assessments of our scenario in full before we go to press, and so getting a chance to correct either our thinking or yours as the case may be!

I finished *The Time of My Life*. I discovered we share one lifelong passion and one boyhood one: travel and Bertrand Russell. I remember spending a summer going through the Introduction to *Principia* at the age of about 16. And while my country-count isn't as high as yours yet, I'm working on it.

I look forward to one day meeting you in person. Perhaps there will be some scholarly meeting we'll both attend. How about the Language Origins Society meetings? This year's is in Amsterdam, which, unfortunately, I won't be able to get to; but next year's is somewhere in the Eastern U.S., I think, and I'll try to go to that one. Could you be persuaded to try our intellectual fare? Greenwood and I did a paper on the logic of the scenario method in the historical sciences between papers on the Bonobo call system on the one side and the (alleged) shift from left- to right-recursion in the Indo-European languages on the other.

I discovered also, from *The Time of My Life*, that I have a feast ahead of me. I've got a lot of Quine to catch up on.

I did finally hear from Prof. Fisiak in Poland. It turns out that, as we suspected, his project of publishing the proceedings of the December 1988 Biology of Language Conference--where the commented-on version of the scenario was presented--has been put on indefinite financial hold.

So it looks like we'd better do something on our own if we expect our

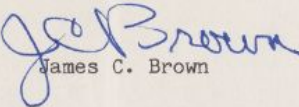
scenario to get the wider hearing we think it deserves.

Could we use your name as someone who knows the scenario and thinks well of the idea of giving it that wider hearing? Could we, for example, show a publisher a copy of your May 1989 letter to me?

Finally, do you know of a publisher who might be more than averagely sympathetic to/tolerant of the monograph-cum-commentaries format? I'm afraid that's going to be the best we can do. Other demands keep me, at least, from making a proper book of it.

Thanks for a fine read, and all the best with your many projects.

Cordially,


James C. Brown

Dear Prof. Quine: —

This is the copy that will
appear on the back cover of
the new book —

Thanks, Jim Brown

Reactions to the 3rd (1975) Edition:

I am impressed with Loglan. Linguistically, logically, and philosophically it is very sophisticated. Its most conspicuous feature, and a laudable one, is the primacy accorded to the category of predicates. No copula remains, nor any distinction between verb, adjective, and common noun. This line is....strongly indicated by modern logic, but hitherto neglected by the International Auxiliary Language fraternity.

Prof. W.V.O. Quine
Philosophy, Harvard University

The language as developed in these publications meets and exceeds the highest hopes I had formed for it when I read the **Scientific American** piece to these many years ago. Prof. John R. Atkins
Anthropology, U. of Washington

I'd like to express my admiration for Dr. Brown's splendid work in the development of Loglan, which I regard as an intellectual tour de force.

Kirk Sattley
Computer Scientist, Wakefield, MA

My reaction to **Loglan 1** is just the same as the reaction I had to Boole's **Laws of Thought**.

Carlos H. Christensen
Programming Language Designer, Melrose, MA

I was at once attracted to the starkly simple, and yet very powerful concepts you introduce, and to the transformational possibilities of the language.

R.W. Meijer, Ph.D.
Computer Scientist, Netherlands

A.2 The correspondence between Quine and the Loglan Institute

23 July 1977

The Loglan Institute, Inc.

A Non-Profit Corporation of the
State of Florida
U.S.A.

Professor W. V. Quine
Department of Philosophy
Emerson Hall
Harvard University
Cambridge, Mass 02138

Business Office:
P.O. Box 1785
Palm Springs, Calif.
92262 U.S.A.
(714) 325-~~8585~~4076

Dear Prof. Quine:

Thank you for sending me a copy of your 5 July letter to Professor Arensberg. As you no doubt guess[^]—a guess herewith confirmed--I was more than ordinarily pleased to learn that my chief instructor on things logical and ontological has found both the logic and the ontology of Loglan laudable. Not surprising, of course; since, to the extent that I understood it, it was your position that was in so many ways embodied in the language. Even so, your letter was unexpected. I am very pleased.

None of which entitles me to engage you further. But the delight you have evidently found in the language does suggest to me that you might well be interested in exercising your godparental role in its further development a bit more actively.

Loglan has now reached the point where occasional conferences among interested scholars would probably be very fruitful. To that end, among others, we are making a grant proposal to NSF this summer. Actually, we had scheduled the proposal to be mailed to them around the 1st of August. But having received this news of your interest in the language, I am going to hold up on that to make you this invitation.

Let me bring you up to date first. During the year and a half since the books were published, the project has gathered momentum. Speakers now exist (to be exact about that plural, three adults and a child can now hold sustained conversation in the language); a bimonthly journal, The Loglanist, is now finishing its first year of publication with 400 subscribers; quite a number of interesting grammatical issues have been raised and solved; the lexicon now faces a massive, if, in detail, minor, revision; and most gratifying to me personally, a large multinational group of interested scholars from every relevant field have associated themselves with the project. Not so pleasing, but inevitable given these other developments, is a correspondence so voluminous that it threatens to engulf us.

What we will be asking NSF for is support for one full-time person to help with our mail; one-third time support for the editor of TL; a graduate assistant for me; and conference and travel money to meet with our associates. Details are in the Draft Proposal which I have taken the liberty of enclosing.

From the Addendum to the proposal you will see that a dozen people have already agreed to be signatories and "Named Associates". I invite you to be the thirteenth. What that would involve is your reading the Draft Proposal, finding yourself in agreement with the potential worth of what we plan to do, signing up and so exposing yourself to occasional invitations to come and chat with us about matters Loglandic once or twice a year...at our expense if we get the grant! Goodness knows it would a great pleasure for me to discuss some of these issues with you personally at last. And Loglan is still the sort of organism that is responsive to the touch of many hands.

* * *

Should this prospect interest you, I have enclosed a "signature slip" which, when you return it, I will then paste up with the others and send the proposal off. You will note that you would be one of only two "luminaries:" you and Whorf's editor, J.B.Carroll. I can't think of any two others I would rather have.

I have also appended to the other "Self-Descriptions" a draft description of yourself. Please emend it in any way you think best; and if I am mistaken in my assumption that once an Edgar Pierce Professor of Philosophy, always an Edgar Pierce Professor of Philosophy, please have your secretary type up a proper signature slip of approximately the same size and format.

I shall understand, of course, if your other commitments prevent you from engaging in our enterprise in even this godfatherly way. In any case, I thank you very much for your thoughtfulness in giving me the pleasure of learning that Loglan has pleased you.

Sincerely yours,

James Cooke Brown
James Cooke Brown

PS. About the Draft Proposal. Inserted after Sec. 4.22 (The Measurement of Whorfian Effects), will be a second section on the longer range "competence" effects predicted by the hypothesis, namely increases ^{of the} transformational, hypothesis-forming and other creative skills, as well as a discussion of the problems of their measurement in longitudinal studies. We do not think such effects will emerge in measurable magnitude in a Summer Workshop setting; but they are, nevertheless, worth mentioning. This is the only substantial revision of the proposal currently planned.

There will, of course, be a bibliography...to which I invite you to add any items you feel appropriate to our enterprise, or to your special interests in it.

Yours, *JCB*
JCB

The Loglan Institute, Inc.

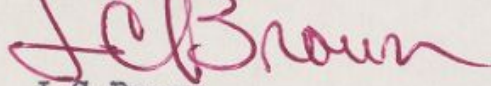
Business Office:
P.O. Box 1785
Palm Springs, Calif.
92262 U.S.A.
(714) 325-6698
4076

23 July 77

Dear Dept. Secretary:

If Prof. Quine is out of town and cannot act on this right away, I would very much appreciate a collect call at the above number. For if the delay in reaching him is substantial, it is very likely that we shall want to send the proposal in without waiting for his return.

Thank you,



J.C. Brown
President

Tentative Description

Willard Van Orman Quine, Edgar Pierce Professor of Philosophy, Harvard University. Prof. Quine is the author of many works on logic and ontology and his book on the philosophical problems of linguistics, Word and Object, _____, contributed decisively to the design of the ontological structure of Loglan. His interest in the project is primarily in the workability, in ordinary language, of the many philosophical, logical and ontological decisions which have been ~~made~~ embodied in the structure of Loglan, and in the ⁱⁿ ultimate relationship to the Whorfian thesis.

The Loglan Institute, Inc.

W.V. Quine
24 July 77

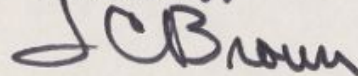
Business Office:
P.O. Box 1785
Palm Springs, Calif.
92262 U.S.A.
(714) 325-~~XXXX~~ 4076

Dear Prof. Quine:

I omitted to ask one very crucial thing in yesterday's letter:- May I have your permission to quote from your letter to Prof. Arensberg? Such quotes would appear in the context of other people's encomia, as in the list of "Early Comments" enclosed. When this list is brought up to date--as perhaps for our forthcoming proposal,--your comments would be in company with, for example, those of J. B. Carroll's (that "Whorf, had he lived, would undoubtedly been interested in Loglan") and like remarks which are, I trust, useful to those interested in ~~xxxxxxxxxxxx~~ judging the worth of ~~the~~ a project without the equipment to assess it ~~for~~ themselves.

I trust that this will not be the case with NSF's referees! But it is often the case with people like publishers. For example, we are now trying to get McGraw-Hill to take over our distribution; and with your permission, I would immediately send a copy of your Arensberg letter to them.

Sincerely,



J. C. Brown

3913

LOGLAN

July 25, 1977

Dr. James C. Brown
P.O. Box 1785
Palm Springs, CA 92262

Dear Dr. Brown:

I was pleased and flattered by your explosive response to the copy of my letter to Arensberg. I have so many irons in the fire that I feel I must decline to join forces with you in your project. But I should be happy to have you use that letter of mine in any way that you find suitable.

Sincerely yours,

W.V. Quine

WVQ:s1

The Loglan Institute, Inc.

W.V. Quine
30 July 77

Business Office:
P.O. Box 1785
Palm Springs, Calif.
92262 U.S.A.
(714) 325-6608

Dear Prof. Quine:

Thank you very much for your incredibly prompt response to my recent letter, and for its anticipation of the caboose that came straggling down the track a little after.

The PO outdid themselves. Your letter came in time for us to act very fast on your suggestion and the Proposal (which I now permit myself to capitalize as a Cast Die) went in on time.

I want you to see what I did with the Arensberg letter, and so enclose a (faint!) photocopy of the new Appendix D in which it is now enthroned. I hope you approve of the chopping I did to fit it in.


I repeat: No one has seen Loglan as perceptively, as richly as you have. I am proud and happy to report your remarks, not only as those of an eminent person but, more importantly to me, as someone who sees the language as I see it (not, for example, as a new gobbledegook for talking to machines...though that function, I suppose, is worth taking some note of).

The linguists are agin it. The computer programmers (gOd bless 'em) are for it. Some of the the psycholinguists, though not many, are for it. At NSF, it will have a curious row to hoe. (How I got that NIH grant in 1960 I will never know; but I do believe that fellow Roger Brown had something to do with it.)

But all one can do is corss ones fingers and go camping until next autumn...which is exactly what I mean to do.

Thank you for your help. If we do get that moneey we will invite you to the conference table somewhere along the lone.

Cordially,



Jim Brown

APPENDIX D

READERS' COMMENTS

Comments from Early Readers of the 1975 Editions
of Loglan 1 and Loglan 4 & 5

I must say that your approach to artificial language creation is much more satisfying (to my mind, at least) than others that have been proposed before. I was at once attracted to the starkly simple, and yet very powerful concepts you introduce, and to the transformational possibilities of the language.

. . . R. W. Meijer, Ph.D.

Computer Scientist
Netherlands Postal and Telecommunication
Administration
Dr. Neher Laboratory
Leidschendam, The Netherlands

I am impressed with Loglan. Linguistically, logically, and philosophically it is very sophisticated. Its most conspicuous feature, and a laudable one, is the primacy accorded to the category of predicates. No copula remains, nor any distinction between verb, adjective, and common noun. This line is reminiscent of Japanese color words, and strongly indicated by modern logic, but hitherto neglected by the International Auxiliary Language fraternity.

Another laudable and basic departure, likewise strongly indicated by modern logic, is the elimination of prepositions in favor of polyadic predicates with optional argument places. . . . Yet another admirable departure is his treatment of indirect quotation and other idioms of propositional attitude: he assimilates them to abstract reference, using his abstractive particle. A major unification is gained.

His reduction of tense to optional temporal particles is a very good move and a familiar counsel of logic. But then he takes a further step which is bold and startling: he construes the unmodified predicate as affirming potentiality rather than actuality. . . . The resulting structure is simple, and decidedly interesting if it works. Here, certainly, is the Whorfian displacement of Weltanschauung par excellence.

For let us recall that this whole staggering Loglan enterprise is purportedly an experiment to test the Whorfian hypothesis. Viewed thus, it is an experiment of roughly the dimensions of Apollo II. (From a letter to Professor Conrad Arensberg.)

. . . Willard Van Orman Quine

Edgar Pierce Professor of Philosophy
Harvard University
Cambridge, Massachusetts

The logical structure of Loglan makes it an ideal middle ground between the simple semantics of programming languages and the almost hopelessly complicated semantics of natural languages. . . . In my field there is a saying that 'one's tools determine the ways in which one solves problems,' which is the programming language version of the Sapir-Whorf Hypothesis.

. . . Bruce MacLennan, Ph.D.

Software Engineer
Intel Corporation
Santa Clara, California

The language as developed in these publications meets and exceeds the highest hopes I had formed for it when I read the Scientific American piece lo these many years ago. Extraordinary!

. . . John R. Atkins, Ph.D.

Associate Professor of Anthropology
University of Washington
Seattle, Washington

Since Loglan is phonemically unambiguous, I think it is the only language that man will be able to really be able to use to talk to the computer in the near future. If Loglan can successfully be used as a vocal computer language, I can foresee the time when computer science departments offer a B.A. degree with Loglan required as the second language.

. . . Mark Mickelsen

Instructor in Computer Science
University of Utah
Salt Lake City, Utah

J. C. B.'s writing style is without doubt the most lucid I have encountered in a long time.

. . . Richard Morin

Contract Programmer
Arlington, Virginia

My reaction to Loglan 1 is just the same as the reaction I had to Boole's Laws of Thought. It is exactly in the center of my area of interest.

. . . Carlos H. Christensen

Designer of AMBIT/G, -L, -S and NICOL
Christensen & Willett Associates
Melrose, Massachusetts
Formerly, Director of Research
Massachusetts Computer Associates, Inc.
Wakefield, Massachusetts

Loglan is without question the language best suited to talk to computers about our world (as opposed to their world). . . . The first application of Loglan that excited me was it's possible use as a computer language. Freedom from ambiguity is certainly an asset there, as are Loglan's other attributes.

. . . Edward G. Prentice

Diagnostic Engineer
Digital Equipment Corporation
Marlborough, Massachusetts

I'd like to express my admiration of Dr. Brown's splendid work in the development of Loglan, which I regard as an intellectual tour de force. . . . The Loglan 'movement' promises to be a great intellectual adventure.

. . . Kirk Sattley

Computer Programmer
Massachusetts Computer Associates
Wakefield, Massachusetts

James Cooke Brown, Ph.D.
President

Herschel Elliott, Ph.D.
Vice-President

Ida Larsen
Secretary-Treasurer

John Parks Clifford, Ph.D.
Editor of *The Loglanist*

William Mengarini
Associate Editor

The Loglan Institute, Inc.
A Non-Profit Corporation of the
State of Florida
USA

15 February 1978

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Editorial Office of
The Loglanist:
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University of Missouri-St. Louis
St. Louis, Missouri 63121
(314) 453-5631

The MIT Press
Massachusetts Institute of Technology
Cambridge, Mass. 02142

Dear Sirs:

Some years ago I submitted two Loglan MSS to you--in the late '60s I believe--and you turned them down after what I felt was a careful review on the grounds (if I remember correctly) that you hesitated to put your imprimatur on a project that was at once so vast and yet fell so bafflingly between all stools. (Perhaps the metaphor is mine; but its sense, I believe, is yours.)

Since then those MSS have become three books, all published. Two of them (the grammar and the dictionary) appeared in paperback and hardback in the winter of '75 in printings of 3000 ea., and the grammar has all but sold out. The third, a collection of technical papers, has appeared in serial form in the pages of our journal.

I approach you again now for two reasons. One, though we have been moderately successful as publishers we do not wish to remain publishers of more than our journal. Our books are therefore in danger of going out of print. Two, the world has changed. The stools between which Loglan fell in 1968 or '69 may now have grown closer together. There is, in short, a good chance that you will now find support for what we are doing.

The project has received a good deal of attention recently from both computer scientists and logicians, many of whom find deep relevance in it to their own concerns. A fair handful of anthropologists and psycholinguists have also taken us up. Indeed, a number of these scholars, some of them eminent (and whose names we would be most happy to supply), have associated with us in a proposal now before NSP. If we get the grant we will all be engaged in an interdisciplinary exercise aimed at perfecting Loglan as (1) a machine/man interface language and (2) an instrument for testing the Sapir-Whorf Hypothesis experimentally. If you would like to see the proposal I would be glad to oblige.

I have enclosed a copy of Loglan 1, one of the two books for which we are seeking a new publisher. The other is the dictionary, Loglan 4 & 5. Despite the fact that orders are still coming in on both these books, we ourselves do not have the funds to reprint. Unless someone

else takes them over soon the books will go out of print. This is a pity. For our sales records show that we are a long way from satisfying the academic market for these books.

I have sent you ~~three~~ things. In addition to Loglan 1, I have enclosed a copy of a letter in which Prof. Quine of Harvard assessed the project for a friend. I trust this will be of interest to you. Third, I have enclosed a sheet of unsolicited comments by early readers, many of them active workers in computer science. In it will I trust be conveyed some of the quality of response that our readers have made to our work.

There is, of course, much more. If, after looking over what I have sent you, you ~~wish seeing~~ more, we can send you (1) Loglan 4 & 5, the other book we would like you to take over, (2) Volume 1 of The Loglanist in which the chapters of Loglan 2: Methods of Construction appear; (3) the papers which have appeared so far in Vol. 2 of TL; and (4) any of our correspondence with the large group of loglanists with whom we work. Any or all of this will help you assess the market for these books.

Let me conclude by mentioning that among our Associates in the proposal before NSF is Prof. John B. Carroll, Whorf's editor for the posthumous work Language, Truth & Reality which I believe you published. As you may know, Prof. Carroll is now Director of the Thurstone Psychometric Laboratory at Chapel Hill. He is vitally interested in the Whorfian uses of the language.

Let me say that books need little revision before republishing; there are a handful of errata in each which need to be cleaned up. Should the language continue to grow, however, further editions may be required later.

Sincerely yours,

James Cooke Brown

CC: Prof. W. V. O. Quine
Prof. J. B. Carroll

Dear Prof. Quine: For your information; and, in case they approach you, I wanted you to know what we are up to. J.C.B.

The Loglan Institute, Inc.

Teaching & Research Center:
2261 Soledad Rancho Road
San Diego, California 92109
(714) 270-9773

W.V.O. Quine
13 October 79

Dear Prof. Quine:

I thought you might like to see what is happening in the third year of publication of The Loglanist. Numerous problems of great subtlety are arising...some of them logical; see pp.207-8,211,213-4,215-7,222-5, etc. I needn't say that it would be a joy to have your occasional contribution to the resolution of these problems.

Cordially,

Jim Brown

Jim Brown

THE LOGLAN INSTITUTE, INC.
2261 Soledad Rancho Road
San Diego, California 92109

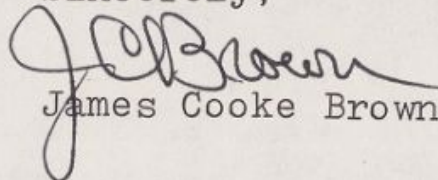
W.V.O.Quine
3 Dec 80

Dear Prof. Quine:

If you have a chance to look at this little book you'll find that it reports fairly concisely the direction in which Loglan has been moving in the last five years. Not only that, but intelligibly...as the other journal issues I have sent you from time to time perhaps have not...catching, as they do, the argument in mid-flight.

We would welcome, for The Loglanist, any constructive criticism you might have to offer, or a word or two of encouragement. We remain unfunded but not, as you see, inactive.

Sincerely,


James Cooke Brown

James Cooke Brown, Ph.D.
President

Herschel Elliott, Ph.D.
Vice-President

Ida Larsen
Secretary-Treasurer

John Parks Clifford, Ph.D.
Editor of *The Loglanist*

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Editorial Office of
The Loglanist:
Department of Philosophy
University of Missouri-St. Louis
St. Louis, Missouri 63121
(314) 453-5631

27 May 83

After 1 July: Rt 10, Box 260
Gainesville FL
32601

Dear Prof. Quine:—

I'd be most appreciative if you'd
be a referee on this — the real stuff
begins on p. 2.

Sincerely,
Jim Brown

P.S. \Rightarrow A former student of yours, Bill
Schulz (now at Flagstaff)
suggested, when he read it, that
you'd be interested in the philoso-
phical implications of my recent
"Scenario" paper* (and that I send
a copy to you). Do you suppose
he's right? (If you do, I will.)

*on the "list of
Pub's" enclosed.

PPS. I'm afraid they want this ASAP after 1 June. J

Division of Fellowships and Seminars
National Endowment for the Humanities
Washington, D.C. 20506

OMB No. 3136-0003

Check one: FELLOWSHIPS FOR INDEPENDENT STUDY AND RESEARCH
Younger Senior

FELLOWSHIPS FOR COLLEGE TEACHERS

(Please also check box on back of this form)

TO BE COMPLETED BY THE APPLICANT:

Name of Applicant: James Cooke Brown, President Emeritus
Institution: The Loglan Institute, Inc., Rt 10, Box 260
City and State: Gainesville, FL 32601 (after 1 July)
Field: Linguistics / Language Engineering

FOR USE OF RESPONDENT: (Please see back of this page for guidelines. Do not use blue ink.)

Signature of _____ Date _____
Respondent

Name and Title _____

Department (or Position) _____

Institution (or Employer) _____

GUIDELINES FOR REFEREES

The person named on the front of this form has applied to the National Endowment for the Humanities for a fellowship to carry out the study described on the attached form. We would appreciate receiving from you a judicious assessment of this application according to the criteria of the program to which the applicant is applying. The applicant has checked the relevant set of criteria below. Any other comments that you think might be helpful will be welcome.

It is important to the applicant that we receive your letter as close as possible to June 1, 1983, the application deadline. Please send it directly to the

Division of Fellowships and Seminars
National Endowment for the Humanities
Washington, D.C. 20506

FELLOWSHIPS FOR COLLEGE TEACHERS

Fellowships for College Teachers provide opportunities for college teachers to pursue full-time independent study and research that will enhance their capacities as teachers, scholars, or interpreters of the humanities to the public, and enable them to make contributions to knowledge and teaching in the humanities. This program is designed to support the whole range of activities, from general study to specialized research, in which college teachers engage in order to advance the understanding of issues in the humanities. Applications will be judged by the following criteria:

1. the quality or the promise of quality of the applicant's work as a teacher, scholar, or interpreter of the humanities;
2. the importance of the contribution that the proposed project will make to a field or fields of the humanities or to its audience's understanding of the issues concerned, either directly or through the development of the applicant's knowledge;
3. the conception, definition, and organization of the proposed project; and
4. the likelihood that the applicant will complete the project.

The Endowment would also appreciate your commenting, if you are in a position to do so, upon the contribution the applicant can be expected to make to teaching and research at the applicant's own institution.

FELLOWSHIPS FOR INDEPENDENT STUDY AND RESEARCH

Fellowships for Independent Study and Research are for scholars and other interpreters of the humanities who can make significant contributions to thought and knowledge in the humanities. Applications will be judged by the following criteria:

1. the quality of the applicant's work, or the promise of quality;
2. the importance of the contribution that the proposed study will make to the applicant's field and to the humanities generally, either directly or through the development of the applicant's capacities;
3. the conception, definition, and organization of the proposal; and
4. the likelihood that the applicant will complete the project.

If you are writing for more than one applicant in this program, it would be helpful if you would compare them.

CURRICULUM VITAE

of

James Cooke Brown

Born 21 July 1921, Tagbilaran, Bohol, P.Is., to American educator parents.

Education:

- B.A., cum laude, University of Minnesota, 1946; major, philosophy; minor, mathematics.
- Ph.D. (M.A. waived), University of Minnesota, 1952; major sociology; minors, philosophy & mathematical statistics.

Employment:

- Military service in World War II, 1941-45; USAAF combat navigator, European Theatre; DFC, AM, Purple Heart.
- Wayne University, Detroit; Pre-Doctoral Instructor, Sociology, 1949-50.
- Indiana University, Bloomington; Instructor, Sociology, 1950-52.
- Free-lance writer, 1952-53; wrote and published several science fiction novellas.
- Knox-Reeves Advertising Agency, Minneapolis; Research Analyst, 1953-54.
- Institute for Motivation Research, Croton-on-Hudson, N.Y.; Director of Statistical Controls, 1954-55.
- University of Florida, Gainesville:
 - Assistant Professor, Humanities, 1955-56; Humanities & Sociology, 1956-57; Sociology, 1957-62.
 - Principal Investigator, The Loglan Project, 1961-62. On the basis of my June 1960 **Scientific American** article I was awarded a \$33,000 1-year grant by NIH to pursue my Loglan studies.
- The Loglan Institute, Gainesville, Florida; (unpaid) Director, 1962-74. I resigned from the University of Florida faculty in 1962 to continue the computer studies of Loglan grammar begun during the grant year. Essentially solitary work, I sought no further funding. "The Loglan Institute" is simply the name I gave this privately-supported activity.
 - In 1955 I had invented a board game, **Careers**, which has been published continuously by Parker Brothers ever since. It is this income that has allowed me to fund my own research. That support is nearly over, however, as Parker Brothers is withdrawing the game in 1983.
- University of Florida, Gainesville, Visiting Associate Professor, Philosophy, Fall 1970. On the publication in 1970 of my utopian novel, **The Troika Incident**, I was invited by my old university to give a course on utopian theories. I accepted.
- The Loglan Institute, Inc., sometimes of Palm Springs, CA, of San Diego, CA, and after 1 July 1983, of Gainesville, FL.; a non-profit research corporation of the State of Florida; (unpaid) President, 1974-82.

The Institute was incorporated in 1974 to permit its endowment, an event that has not yet occurred. Since its incorporation, The Institute has published books, teaching aids, a journal of Loglan studies, a monthly newsletter for its members, and has given instruction in the language to visiting apprentices. Due to the small size of its membership, The Institute has low revenues and no paid employees. In addition to my presidency, my own unpaid roles have included:

Chairman of the Board, 1974-date.

Publisher of **The Loglanist**, 1976-date.

Head of the Machine Grammar Project, 1977-82.

Head of the Morphological Revision Project, 1978-82.

President Emeritus & Lifetime Member of the Board, 1982-life.

The Institute has four other unpaid Officers/Directors, among them the editors of its two periodicals.

Honors & Awards:

Apart from the NIH grant in 1961-62, and having my master's thesis reclassified as a doctoral dissertation in 1948, with the M.A. degree consequently waived, I have received no academic honors or awards.

Principal Publications (Including 2 Now in Submission):

- "Loglan", *Scientific American*, June 1960.
- *The Troika Incident*, Doubleday, New York, 1970.
- *Loglan 1: A Logical Language*, 3rd Edition, The Loglan Institute, Palm Springs, 1975.
- *Loglan 4 & 5: A Loglan-English/English-Loglan Dictionary*, 2nd Ed., The Loglan Institute, Palm Springs, 1975.
- *Loglan 2: Methods of Construction*, a 1967 work; its chapters were published serially in *The Loglanist* 1:1-2:1, October 1976 through February 1978.
- *Loglan 3.1-3: Learning Loglan*, a trial primer published in *The Loglanist* 2:2, June 1978.
- *The Machine Grammar and Corpus of Loglan*, NB1, The Loglan Institute, San Diego, June 1982.
- *A Proposed Morphological Revision of Loglan*, NB2, The Loglan Institute, San Diego, August 1982.
- "A Possible Scenario for the Evolution of Mind", with W. Greenhood; being offered to *Current Anthropology*.
- "Report on Loglan: Writing a Machine Grammar for a Speakable Language", with S. W. Layson, J. S. Prothero & S. Linker; being offered to *Communications of the Association for Computing Machinery*.

Languages:

I am fluent in Spanish; handle French and German adequately as a traveler; have extensive dictionary familiarity with Russian, Hindi, Japanese and Mandarin Chinese; and I am one of perhaps a half-dozen certified teacher/speakers of Loglan.

Referees:

I am asking Prof. John B. Carroll, who was Whorf's editor, to comment on the Whorfian and psycholinguistical significance of my work, Prof. Willard van Orman Quine to assess its logical and philosophical implications, and Dr. Reed Riner to evaluate the anthropological significance of the project.

Recent Grants:

Since 1962 the Loglan Project has been unfunded.

DESCRIPTION OF PROPOSED STUDY

I commence with a brief history of Loglan, since everything I propose to do in the grant year will depend heavily on prior work. I have also elected to write this description in the third person. Loglan is an embarrassingly monumental project. It is easier to write about a monument-builder than as one.

A Brief History

Loglan, which now amounts in retrospect to a major part of Brown's life's-work, was originally conceived as a social psychological test of the Sapir-Whorf hypothesis that the structures of different natural languages place very different limits on the development of human thought. Loglan was designed to push those limits outward in certain specified directions: it was to be a hyperlogical language, a metaphysically parsimonious one and culturally neutral, but also to have a rich capacity for metaphor. At the same time, it was to be easily learned. The project developed in the following way.

Brown's first paper on the subject appeared in the **Scientific American** in June 1960, but preliminary design studies had already occupied five years. The paper stirred up considerable interest, and Brown received a grant (NIH) to continue his work in 1961-62. The first lexicon was completed and computer studies of the "speakability" of the language (following Yngve, 1961) and of syntactic ambiguity (following Oettinger, 1961) were begun.

In 1962 Brown resigned from the University of Florida faculty to continue his computer studies of the language, and was given continuing computer privileges at both the UF and the FSU (Tallahassee) computing centers. In 1964 the computational phase of the work was completed. The first book on the language, an early version of **Loglan 1**, appeared in 1965.

In the period 1966-71 both the logical usages of the language and its lexicon continued to grow; but its grammar remained encouragingly small. **Loglan 1** was revised; several more books were written; and these together with the 1962 dictionaries were made available on microfilm to the many scholars who had been interested in the project by the 1960 paper. In 1972-74 time was found to compile a new dictionary; **Loglan 1** was again revised; and in 1975 these two volumes were offered in limited printings (3000 ea.) to the international scientific community through small ads in the **Scientific American**.

The 1975 publications were also well-received, this time especially by the computing community. **Loglan 1** was soon out of print; but several hundred of the book-buyers expressed interest in a permanent journal, and so one was established. The language began to be re-identified by this new group of workers as a potential "man/machine interface language", an unexpected view but not inconsistent with the logical goals of the language. Development along these lines began to take place very rapidly in the pages of **The Loglanist**. John Parks-Clifford, a logician-linguist at the University of Missouri-St. Louis, became the editor of the new journal; and it soon had, and has kept, about 250 subscribers from some 20 countries. Computer scientists, logicians, mathematicians, anthropologists and linguists predominate. But many generalists with humanistic backgrounds more like that of the inventor's are apparently also attracted by the promise of the language.

In 1977-78 two major engineering projects were undertaken. The first was to write a "machine grammar" of the language. This, if successful, would render the language understandable by computers. It would also rid it of the last vestiges of "syntactic ambiguity"... unclarities of the 'They are flying planes' variety, some few of which still remained. The second project was to devise and test a new system of "decipherable affixes". This, if successful, would make the meaning of unfamiliar compounds instantly guessable by the novice, much as it does in German. The new affixes were thus meant not only to increase ease of learning, already very high, but also to stimulate new lexical growth through spontaneous word-making. Both projects were brought to satisfactory conclusions in 1982.

The Present Task

The Institute now plans to make the new state of the language available to a wider public. Once again Brown will play a major role. His first book, **Loglan 1**, is again seriously out-of-date. Usages have grown enormously in the last eight years; and the grammar, while no larger, has undergone interesting if minor changes in becoming machine-intelligible. All this will be incorporated in the new edition. **Loglan 3**, the sequence of primer lessons begun by Brown but aborted in 1978 (when the words began to change), is now ready to be taken up again. The revision of the dictionaries, **Loglan 4 & 5**, will be deferred until these other tasks are done. But the word-growth that was expected from the new morphology has already begun. The number of Loglan entries in the new dictionaries may well be twice the number in the old: from 4000 to about 8000. (This will mean about four times that many English entries; for Loglan is semantically an extremely efficient language.) When the dictionary work is resumed, Brown will have primarily an editorial role. For the new lexicon will be the

work of many heads. More immediately, audio cassettes of spoken Loglan must be re-recorded; for the sound patterns, too, have subtly changed. Finally, some new "computer-aided instruction" programs are now being written by our programmer members. These, too, must be furnished with accurate inputs: lists of words, affixes and "utterance-frames" that constitute the masses of material, as for any language, to be learned.

The revision of **Loglan 1** is now underway. It may well be completed by the time the proposed support begins on 1 January 1984. As soon as a new **Loglan 1** is in hand, work on a new primer can begin. The primer lessons were well-begun in 1978; and the technique chosen has been shown to be effective...at least for what we have so far seen of Loglanists. No difficulty is anticipated in extending the present series, which stops at four, to the 12- or 15-lesson length that is expected to be sufficient to put the learner in command of the grammar. (Loglan grammar is minuscule. Two hundred rules suffice where a partial grammar of a natural language requires 6 or 7 thousand. This means that grammatical mastery can be very rapidly achieved.) Once the primer is done, the input lists to the teaching programs can be updated, and the programs themselves tested on the newest newcomers to the project. Finally, cassettes will be keyed to input lists and to groups of primer lessons, and recorded.

This completes the work planned for the grant year. If time is still available when the planned work is done, then the compilation of the new dictionaries can begin. But dictionary-making is a formidable task; it will require staff. Given its scant resources, The Institute reckons that it can serve its public best by issuing what is very largely the product of Brown's solitary work first--a new **Loglan 1**, an expanded primer, and the cassettes and teaching programs--and let the dictionaries and reference manuals emerge as revenues increase.

Humanistic Implications

Loglan is interdisciplinary...not only between sciences, but between the sciences and the humanities. The enterprise commenced with a philosophical insight: that the structure of reality is in part determined by the metaphysical presuppositions of the symbolic calculi in which information about reality is manipulated and conveyed. It ends--or has paused, anyway--with the application of certain mathematical algorithms, originally contrived by computer scientists for an entirely different purpose (Johnson, 1975; Aho & Ullman, 1977), to the engineering of an ambiguity-free human language (Brown, Layson, Prothero & Linker, n.d.). Along the way it has analyzed the "goodness", and catalogued the variety, of human metaphors...an essentially literary undertaking. At times it has pursued the biological goal of detecting and identifying the ethologically fundamental percepts of the human animal, as these may be suspected to be among the common elements of human lexicons. At other times it has engaged in the psycholinguistical pursuit of meaning, in particular, in the ways nuggets of meaning spontaneously coalesce to form the complex signs of speech. Finally, it has attempted the engineering of a sound-and-speech system that was to be both optimally learnable and powerfully encouraging to both literary and lexical invention. And at the very outset of the enterprise, the results of some two centuries of logical inquiry into the formal shapes of the validity-conserving transformations were installed on the bedrock of the language.

The implications of completing such a project--of actually delivering such an object to mankind--are as wide in scope as they are unguaranteeable in detail. Loglan may usher in an experimental phase in the science of linguistics; or it may not. Loglan may be the breakthrough that will lead to an entirely new technology: the engineering of special languages for special purposes. Or it may not. And certainly no one has yet had time to experience the quantum leap in human mental processes that may well attend the reduction of the "disambiguation burden" to zero...a formal feat which Loglan has now accomplished. Brown and Greenhood (n.d.) have argued that it was by reducing the number of possible disambiguations of long sentences that grammar acquired its adaptive function in the first place, and that it is the adaptive advantage of those "long sentences" that drives the evolution of natural grammars

still. If this is so, what happens when the disambiguation burden goes to zero, as it has in Loglan? What happens to minds, in short, that are freed from the "dull necessity" of following plausibility routes in assigning syntactic meanings? We do not yet know the answers to these questions. No Loglanists have been around long enough for us to find out.

More immediately, but no more guaranteeably, Loglan may prove to be a more effective instrument of translation than any natural language is...if only because it is less likely to mask unstated assumptions or distort metaphorical intent. Loglan has been designed to be culturally neutral. That means that it may be an unbiased interpreter of one culture to another. The very parsimony of its own assumptions, the unrestricted scope of its semantic operators, the nakedness of its logical arrangements, the freedom of its metaphor...all this should make Loglan inherently better at expressing the covert claims and poetic intent of utterances in any given natural language than their translation into any **other** natural language could reveal. But once remade in Loglan, or translated into Loglan, those at best half-unconscious, or even wholly unconscious, claims and images would then be plain to everyone...including the speaker. If Loglan does turn out to have this clarifying property--as it now seems very likely that it has--it may prove useful in the global village: a language in which to formulate disputes, to translate critical documents, to find out precisely what "those foreigners" mean. Once widely enough spoken by its aficionados for such virtues to be evident, Loglan might eventually become a world language of commerce and diplomacy, of travel, science and scholarship...for all cross-cultural transactions, in short, save war. Thus, by its very nature Loglan may turn out to be preadapted for the role of that "world auxiliary language" that the international language people have been talking about. Never mind how it got that way. It is a language that **happens** to have been engineered for that very culture-bridging feat that any universal second language will be called upon constantly to perform. Whether the engineering of the bridge has succeeded, whether neutrality and parsimony work in these ways interculturally, is still, of course, anybody's guess.

In the meantime, Loglan has--and has without doubt--two humble properties that may give it **raison d'être** in the modern world. (They may also give it time in which to steep its richer virtues.) Loglan is speakable; it is also understandable by machines. All natural languages share its speakability; all programming languages share its crystalline clarity...at least to machines. But no other object possesses both total clarity combined with the rich tapestry of speech. In this, perhaps, Loglan has a unique role to play in the modern world. It is a possible bridge between Lord Snow's other "Two Cultures": a mental playing-field on which both the poet and the programmer may find themselves agreeably at home.

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June 7, 1983

Dr. James Cooke Brown
2261 Soledad Rancho Road
San Diego, CA 92109

Dear Dr. Brown:

Your letter of May 27 and project proposal were awaiting me here just now on my return from ten days' absence. I have been too much occupied with other matters in recent years to keep up at all with your burgeoning output on Loglan, and I cannot see my way now to studying these matters sufficiently for a responsible judgment regarding your project. Hence I must ask you to seek the required referee elsewhere. But I want you to continue to make what use you can of the letter that I wrote years ago regarding your work.

With best wishes,

Sincerely yours,

W.V. Quine

WVQ:1km

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21 February 1984

Prof. W. V. Quine
Philosophy
Emerson Hall
Harvard University
Cambridge MA, 02138

Dear Prof. Quine:-

I've been meaning to thank you for your suggestion last summer that I use your 1977 letter in connection with my application for a National Endowment for the Humanities grant. I did, and was proud to do so. Nothing came of it. Probably Loglan is just too carefully engineered to appeal to humanists. A pity.

The international language people are picking up on it these days, which is encouraging. For ourselves--for me, that is, and that group of hard-working aficionados I picked up with the 1975 books--the big task now is preparing to "go public" again, this time with a decent kit of learning materials. We've completed three things in the last 8 years (despite our lack of funding): (1) an enormously augmented kit of usages, most of them "congealed philosophical analyses" ready now to be used habitually (but each representing some fairly cunning thinking at the moment of birth); (2) a brand new machine grammar of the language, which was a bit tricky to write but now makes Loglan (in some sense) "machine intelligible"; and (3) an expanded morphology which makes adding (a) complex and (b) borrowed predicates to the language very easy.

All this entitles us, we think, to go public again with something very like a mature language...ready to teach it this time to tens of thousands.

If this final effort to make Loglan financially independent works I may be able to retire from active loglanizing and do something else for a while.

Thank you for your suggestion...and once again for that magnificent letter. It or parts of it will almost certainly appear on the back cover of the 4th Edition...if you're still willing, of course, to let us use it in that way.

Sincerely,

Jim Brown
Jim Brown

Dear Prof. Quine:

28 Sep '88

I'm nearing the end of a rewrite of Loglan 1, and would like to offer you, as one of the intellectual godfathers of the project, a chance to read all or any part of it before publication.

Even unfunded we've done a lot of work since '75 and it's all come together very well. I think you'll like what I have done with it.

Publication of the new, the 4th Edition is planned for this winter. There will be plenty of time for you (and others) to have a careful read, and for me to incorporate your criticism. The book has grown a bit; it'll be around 550pp now* as opposed to 316pp. But then so has the language. A full kit of learning materials will accompany it this time.

I plan to put, with your renewed permission, excerpts from your 1977 letter on the back cover. I'm sure it will speed what I hope this time is the project's final takeoff. Sincerely, J.C. Brown

* with appendices

July 5,

to Arensburg

JCB

LOGLAN

Oct. 5, 1988

Dear Dr. Brown:

I am glad to hear of the good progress of Loglan.
I am too taken up with other efforts to endeavor
to ~~keep~~ ^{catch} up with that progress, but I am glad to
to ~~keep~~ ^{to exempt for} permit re-use of my 1977 letter to Aronsberg ^{that you}
^{quoted in Appendix D of your application of July 1977, but}
subject ^{now} to two conditions. (1) Indicate that the
letter dates from 1977. (2) Delete the final
three-line paragraph, which was a playful bit of
hyperbole ~~letter sent to~~ ^{was suitable for} a letter to my old friend
Aronsberg than for wider dissemination.

Sincerely yours,

W-U Q—

A.3 (Part of) the correspondence between Quine and Prof. Arensberg

Columbia University in the City of New York

DEPARTMENT OF ANTHROPOLOGY

Schermerhorn Hall
New York, N. Y. 10027

10 June 1977

Dear Van:

I've been working through Loglan "a logical language" concocted by James Cooke Brown, anthropological linguist. He has cast your symbolic and mathematical logic into a usable spoken language. It seems to go very well, except for the stringent restrictions he imposes on the phonemic pattern of predicate words. He reaches a grammar that while accommodating English reaches the reliance on word order and its flexions of Chinese and Malay. Do you know it? He cites you often.

He's also busy inventing a vocabulary, mixing letters from the eight most frequent world languages and arriving at words, his predicates, of his stringent five-phoneme CCVCV or CVCCV pattern. I think he is mistaken there. I would rather see his grammar imposed on international scientific Latin, or Greco-Latin

and English; ~~loglan~~ Loglan fa rodja

inoca da balci ~~loda~~ loda purda lo sensi

(Loglan will grow only if it makes ^{its} words out of science) ('sensi', thus , is his reduction of science, scientia , using the pattern CVCCV).

('purda' , word, is a similar hash of parole, word, etc.). *

If you do know of Brown's efforts, do let me have your reactions to them.

Have a good summer. I'll be on the farm here ,mostly, preparing for my year off , now beginning.

Aff.

Connie

C M Arensberg

(otherwise Āranyapuram

*Better would read: Loglan fa cresce inoca
da structo loda lexeme lo scienti .
(logo)

July 5, 1977

Professor Conrad Arensberg
Schermerhorn Hall
Columbia University
New York, NY 10027

Dear Conrad:

Your letter was awaiting me when I got back a few days ago from celebrating the five-hundredth anniversary of Uppsala, getting taped in London for television, and experiencing a weekend in Leningrad.

I am impressed with Loglan. Linguistically, logically, and philosophically it is very sophisticated. Its most conspicuous feature, and a laudable one, is the primacy accorded to the category of predicates. No copula remains, nor any distinction between verb, adjective, and common noun. This line is reminiscent of Japanese color words, and strongly indicated by modern logic, but hitherto neglected by the International Auxiliary Language fraternity.

Another laudable and basic departure, likewise strongly indicated by modern logic, is the elimination of prepositions in favor of polyadic predicates with optional argument places. One advantage of this, rather passed over by the author, is accommodation of vagueness. What are the lower limits of 'short', 'bald', 'blue'? None; treat these predicates as incomplete occurrences of 'shorter than', 'baldier than', 'bluer than'. And so he does.

He could have made some capital of this on p. 57, where he treats of what I have called the syncategorematic use of adjectives. He might have rendered "He is a short man," or "He is short for a man," as "He is shorter than most men": "Da corta re mrenu." However, other cases ("Beautiful swimmer," "good mother") resist this treatment.

In this connection I note his curious use of the word "metaphor" to mean, apparently, whatever he leaves unanalyzed.

Yet another admirable departure is his treatment of indirect quotation and other idioms of propositional attitude: he assimilates them to abstract reference, using his abstractive particle. A major unification is gained.

His reduction of tense to optional temporal particles is a very

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good move and a familiar counsel of logic. But then he takes a further step which is bold and startling: he construes the unmodified predicate as affirming potentiality rather than actuality. I don't know what stand to take on this. Philosophically I am averse to the modalities, but they play a dominant role in natural language, and their services cannot be dispensed with unless alternative devices are forthcoming. His is the drastic expedient of simply letting them take over; unilateral disarmament. The resulting structure is simple, and decidedly interesting if it works. Here, certainly, is the Whorfian displacement of Weltanschauung par excellence.

For let us recall that this whole staggering Loglan enterprise is purportedly an experiment to test the Whorfian hypothesis. Viewed thus, it is an experiment of roughly the dimensions of Apollo II. Happily there are fringe benefits.

His accommodation of the vocative is amusing: his proper names carry a sort of definite article, which drops for the vocative. But what about a vocative for "tu" or "tomsurre"?

Two obvious devices that set mathematics abruptly apart from ordinary language are variables and parentheses. He sensibly adopts these as particles. Numerous further particles are marshaled with much subtlety to render many subtle but important distinctions explicit. I could wish that he could manage more simply, but we can be sure that he wishes the same. A superficial way in which I think one particle could be saved is by dropping the distinction between "la" and "le".

I agree with you in deploring the ecumenical hash of his lexicon. I deplored the line taken in Esperanto and Volapuk: that of choosing a root according to population figures. We see "mano" in Esperanto or Volapuk and vacillate between "hand" and "man" while speculating on populations. Much better to cleave to Latin and Greco-Latin roots, subject to whatever Polynesianization may be needed to fit phonetic restraints.

Some small points in closing. At the middle of p. 63 we read "This is because connecting predicates is a grammatically simple operation in Loglan." No, this is not why. English allows "alive if and only if breathing" and "alive whether or not breathing." The brevity of his (3)-(5) in Loglan is due simply to his adoption of short words for the biconditional and the indifference function.

In his table on p. 38 the formula for structure words is redundant; [(C)V] would suffice, since it already covers [(C)VV] as a

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special case, if I interpret his brackets right. The remark applies also to p. 31.

On page 35, read "le chat."

You don't indicate the address of your farm. I hope a secretary will forward this letter.

Yours,

Van

W.V. Quine

WVQ:s1
cc to Dr. James Cooke Brown