How does language shape the way we think
The defence of linguistic relativity

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Table of contents:

I. Introduction
   1. Definition of the problem
   2. What are the Chapters about

II. Chapter I
   1. History of an inspiration
      1.1. The birth of the idea
   2. The notion
      2.1. Three underlying assumptions
      2.2. The principle of linguistic relativity – reconstruction of the idea
   3. The arguments
      3.1. Pre – research studies
         3.1.1. Hazardous forms of behaviour
            3.1.1.1. “Gasoline drums”
            3.1.1.2.. Linguistic meaning causing hazardous behavior – 2nd example
         3.1.2. Metaphorical Objectifying
         3.1.3. Lessons to be learnt
      3.2. SAE and Hopi, i.e. an analysis of large-scale linguistic patterning and its influence on thought, behavior and general perception of reality
      3.3. Understanding and the perception of time
      3.4. The concepts of space and matter
      3.5. Microcosm - explaining the concept of thought
      3.6. What have we learnt
         3.6.1. SAE
         3.6.2. Hopi

III. Chapter II
   1. Noam Chomsky against the Whorfian view
      1.1. The reconstruction and arguments
      1.2. Chomsky’s critique – lessons to be learned
   2. Colour terms and qualia
      2.1. Brent Berlin and Paul Kay
Introduction

1. Definition of the problem

Language is the most powerful tool of communication. Extremely flexible, throughout centuries, it has been demonstrating an incredible capability to evolve and adapt. Since the estimated number of languages is the staggering 5000, we may be confident that they ‘(…) differ dramatically in terms of how they describe the world’. (Baroditsky 2009, p.1).

Nevertheless, is it right to claim that the language, which we speak, strongly influences the way we think and behave? Do linguistic habits of cultures and nations create main differences in how people perceive and conceptualize reality?

‘The possibility that the language we speak influences the way we think has excited both popular and scientific imagination in the West for well over a century.’ (Lucy 1985a, Aarsleff 1982)

The problem we are about to analyse in the thesis is not a new one. For instance, take Wilhelm Humboldt, who considered language as the very fabric of thought, or John Dewey, who assumed that it is ‘(…) the tool of thinking.’ (Dewey 1997 [1910], p. 170) What is the most striking in the problem’s history, however, is its constant repetition and redefinition undertaken by generations of thinkers. Yet, it has still been raising doubts and discussions and has been making contemporary researchers attempt to find connections between language and thought.

This thesis has two goals:

1) To review and examine the most famous and influential formulations of the above problem conceived by Benjamin Lee Whorf, known as the linguistic relativity principle.
2) To demonstrate that even tough the turbulent intellectual climate and modern knowledge have modified the original form of the principle, it is still an important and necessary component of the research on thought and language and even consciousness.

2. What are the Chapters about?

Chapter I

This Chapter is divided into two parts – (1) historical and (2) argumentative
Ad 1) Part one analyses the historical background of the linguistic relativity thesis. In it, I answer the question - what lead and inspired Benjamin Whorf to conceive his thesis making him ‘(...) the most celebrated relativist of this century.’ (Lakoff 1996, p. 304)
This part also includes works of Aristotle, St. Augustine, Roger Bacon, and Wilhelm Humboldt and his significant collaboration with Edward Sapir.
Ad. 2) First, the second part reviews the logical structure of the thesis of linguistic relativity, or in other words, the Whorf syllogism.
Second, it reconstructs Whorf’s line of argumentation in favour of the thesis, with the most important arguments being:
  i. The linguistically influenced forms of hazardous behaviour
  ii. Understanding and the perception of time in both SAE and Hopi
  iii. The role of nouns of physical quantity such as e.g. “substance” and “matter” in SAE and Hopi language

Chapter II
This Chapter is central for my Thesis. In it, I attempt to reconstruct the arguments, which explicitly or implicitly stand against the linguistic relativity principle, as meant by Benjamin Whorf.
At this point, the following accounts are considered essential:
  i Noam Chomsky’s critique (i.e. the autonomous syntax perspective), and
  ii Brian Berlin’s and Paul Kay’s research on the universal rules governing the use of colour terms.

Chapter III
This final and conclusive Chapter includes the contemporary research, which not only examines and gives arguments for the deep relation between language and thought but also between language, intelligence, perception and even consciousness. I believe that this research substantiates Whorf’s essential claims. Specifically, I will give a detailed examination of the arguments presented by (1) Daniel Dennett and (2) Linda Boroditsky.
Chapter I

This chapter focuses on the classic concept of the principle of linguistic relativity, as meant by Benjamin Lee Worth. Only in this way, one can fully realize how deeply this concept has been influencing modern debate on causal links between language and thought and how revolutionary it turned out to have been.

1. History of an inspiration

Every revolutionary concept, thought, or an idea, stems from inspirations or traditions. Thus, to begin this chapter, it is important to analyse the intellectual climate and traditions of the times when Worth lived and created, books he had read and people with whom he had discussed ideas regarding language, thought and consciousness.

Having such an analysis made and the background knowledge in place, we will be able to answer the question of what triggered the concept of linguistic relativity.

1.1. The birth of the idea

An'(...) entire treatment of epistemology and ontology in two millennia of speculations about language and mind (Gumperz & Levinson 1996, p. 3) would have to be involved, if one attempted to work out a full and adequate account of the ideas comprised in those speculations. Because the scope of this thesis cannot be as broad as the above mentioned past development. The major facts that influenced the linguistic relativity research present themselves as follows:

Aristotle began the research on how the language – understood as a sophisticated symbolic system – can represent the concepts in our mind.

Then, many of the early classical and medieval discussions, which centred the language, evolved around the issues of translation. Prime example of that thought can be found in the writings of both St. Augustine, who maintained that the language lexicon is barely a set of labels for the existing concepts and Roger Bacon who conceived a revolutionary claim that, despite his strong views on the universal foundation of grammar, ‘(...) the mismatch between semantic fields in different languages made accurate translation impossible’ (Gumperz & Levinson 1996, p. 1). It is, as I believe, the earliest trace of relativism to be found in the language – thought relation problem.

The issue, raised in this thesis - lively debated in XVIII century - is whether language provides an abstract, symbolic thought, or it presupposes the thought?
For Immanuel Kant, language was a tool of another nature, used by human being to explore the world around. In my opinion, the creation of link between theories of universal, generative and transformational grammars is one of Kant’s most prominent and influential achievements in terms of language research. This historical context will re-emerge later in the thesis.

The XIX century colonial expansion must have played its role in triggering the research ‘(...) on the role of language in perceived in perceived cultural superiority.’ Indeed, it strongly influenced numerous debates in both philosophy and linguistics by raising the question whether thought is language depended or not.

One of the most important representatives of the debates was Wilhelm von Humboldt, a German philosopher, linguist and a great educator. In his writings, Humboldt considers language as the very fabric of thought, with his views on the language being founded on the conviction that language and thought are in close union and must be considered identical, even if, artificially, we can separate them.

‘Language is the formative organ of thought. Intellectual activity, entirely mental, entirely internal, and to some extent passing without trace, becomes through sound, externalized in speech and perceptible to the senses. Thought and language are therefore one and inseparable from each other.’ (Humboldt, [1836] 1988: 54)

Revolutionary enough, Humboldt’s views influenced the generation of German romantics. As one of the most prominent thinkers of that time, he was in open opposition to the Enlightenment idea that it is possible to set up a universal grammar, as proposed e.g. by Leibniz.

The German thought, however, was not the only source of the ideas of relativity with regard to language. Take the famous Course in general linguistics by Ferdinand de Saussure, particularly, the notion of valeur. Its distinctive meaning, developed by other notions and other expressions, implies that ‘(...) the content of linguistic expressions depends on the system in which they are embedded, rather than (...) on their denotation.’ (de Saussure, [1916] 1986). In addition, if assumed that no two linguistic systems are the same, the plausibility of linguistic relativity becomes a natural conclusion.

Cultural relativism – a notion conceived by Emile Durkheim in his later works - is strictly tied to this is particular form of linguistic relativity. I believe that some of Whorf’s anthropological ideas were strongly influenced by Durkheim’s notion.

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1 Fr. Valuable
Pragmatism is another notion worth mentioning here, its representative being John Dewey, who assumed that language is ‘(...) the tool of thinking’ (Dewey 1997 [1910], p. 170) and is necessary for the logical organization of meanings (Dewey 1997 [1910, p. 175).

An American linguist Edward Sapir - in collaboration with his colleague Franz Boas, American anthropologist and linguist, raised in the tradition of German research - makes another step on the road to developing the concept of linguistic relativity.

In one of his most famous quotes, he states:

‘Human beings do not live in the objective world alone, nor alone in the world of social activity as ordinarily understood, but are every much at the mercy of the particular language which has become the medium of expression for their society. It is quite an illusion to imagine that one adjusts to reality without the use of language (...). The fact of the matter is that the ‘real world’ is to a large extent unconsciously built up on the language habits of the group. (...) We see and hear and otherwise experience very largely as we do because the language habits of our community predispose certain choices of interpretation.’ (Sapir 1921)

We cannot overestimate the impact that Sapir’s teachings and writings had on his student Benjamin Whorf. Sapir originally coined the phrase linguistic relativity and in addition, the above quote marks the beginning one of Whorf’s most influential paper The Relations of habitual thought and behaviour to language, where he lays out the outcome of his research and thus, the strongest account of linguistic relativity. In addition, Sapir was the one who had vectored Whorf toward the tradition of philosophical, anthropological and linguistic tradition of the research on the causal relations between thought and language.

I think that the history of the philosophical, linguistic and anthropological research on the language had the most significant impact on shaping Benjamin Whorf’s understanding of the notion of linguistic relativity.

Now, the above historical background enables us to proceed further to the argumentative part of this chapter, in which I am going to analyze, in detail, the way Benjamin Whorf substantiates his claims.

2. The notion

2.1. Three underlying assumptions

What makes Whorf concept of linguistic relativity different and more influential that other, presented in the historical introduction?
He ‘(...) brought to the idea a new and heady mix of an empiricist epistemology, an insistence on the underlying systematicity of language as structured semantical system, an emphasis on the unconscious influence of language on habitual thought.’ (Gumperz & Levinson 1996, p. 21)

To put it another way, we can say that his notion of linguistic relativity has three distinctive themes, not met in previous researches.

The themes took their final form at the turn of 1930s and 1940s. Let us look at them.²

i. **Empiricist epistemology presumption** – all possible knowledge comes from experience

‘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 of our minds.’ (Whorf 1956, p. 213)

ii. **Structuralist assumption** – ‘(...) language forms a system of oppositions, such that formal distinctions directly reflect meaning distinctions.’ Gumperz & Levinson 1996, p. 4)

What is more, in this understanding, language is understood as a part of the realm of pattern.

‘Quantity and number play a little role in the realm of pattern, where there are no variables but, instead, abrupt alternations from one configuration to another. (...) what linguistics requires is, (...) exact “patternment”.’ (Whorf, 1956, p. 230 – 1)

iii. **Assumption of the possibility of unconscious mental life** – possibility that language affects us beyond the conscious awareness.

‘The phenomena of language are to its own speakers largely of a background character and so are outside the critical consciousness and control of the speaker.’ (Whorf 1956, p. 211)

Now that we are acquainted with the pillars of the linguistic relativity principle, we can now proceed to the notion itself.

2.2. **The principle of linguistic relativity – reconstruction of the idea**

In Whorf’s own words:

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² Each presented assumption will be followed by a citation from Whorf’s writings.
‘(…) what I have called the “linguistic relativity principle” (…) means, in informal terms, that users of markedly different grammars are pointed by their grammars towards different types of observations and different evaluations of externally similar acts, and hence are not equivalent as observers, but must arrive at somewhat different views of the world.’
(Whorf 1956, p. 221)

Two of the main claims of the principle are thus unveiled: (1) Linguistic difference and (2) linguistic determinism. Let us now focus on those two notions.

1) **Linguistic difference** – this claim states that all languages differ in the respect of the semantic structure. That includes:
   i. Intensions (senses) of morpho – syntactic and lexical categories
   ii. Extensions (the denotations) of morpho – syntactic and lexical categories

   In addition, they can differ independently of each other.

2) **Linguistic determinism** – both explicit and implicit linguistic categorizations may strongly influence ‘(…) aspects of non – linguistic categorization (…)’: our perceptive skills, memory and cognitive abilities.

   We distinguish two versions of this claim:
   i. **Weak** – concepts, which are encoded linguistically are:
      - easier to remember
      - more accessible
      - in general, favored
   ii. **Strong** – If a concept happens to be, linguistically unencoded it would be unattainable.

   In a generalized form, the notion of linguistic relativity can be presented as follows:

   Assuming that:
   1) linguistic categories differ across languages
   2) aspects of one’s thinking are determined by language

   , we can conclude:

   3) that aspects ‘(…) of individuals’ thinking differ across linguistic communities according to the language they speak.’ (Gumperz & Levinson 1996, p.24)

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3 One could ask, whether those three claims are argued for or defended?
Particularly interesting here is the way Whorf has constructed this notion - the conclusion holds even with the weakest version of the premises 1) and 2):

i. There is at least one aspect of semantic structure that is not universal

ii. It has at least some cognitive effect

iii. Then one can rightfully claim that at least ‘(...) some cognitive variation in line with linguistic difference.’

In addition, the strong version of the principle states that the semantic content of the concepts provides all vocabulary of our thought.

I believe that the above distinction implicitly presents two central problems of Whorf’s concept:

1) What is the degree of linguistic influence on cognitive processes and behaviour

2) What is the degree of linguistic difference

To see how he resolves those issues and what is most important, substantiate the linguistic relativity principle; let us now proceed to the presentation of his arguments.

3. The arguments

3.1. Pre-research studies

Benjamin Whorf’s interest in the language/behavior interaction – and specifically, of how the basic language words, phrases and patterns of limited range shape human behavior - had triggered well before studying under Edward Sapir; in the field that at first, can be considered beyond the linguist’s interest. (Whorf, 1956, p. 135).

Specifically speaking, he was working for a fire insurance company.

He recalls:

‘(...) I undertook the task of analyzing many hundreds if reports of circumstances surrounding the start of fires, and in some cases, explosions (...). My analysis was directed toward purely physical conditions (...). But in due course it became evident that not only not only physical situation qua physics, but the meaning of the situation, was sometimes a factor, through the behavior of the people, in the start of the fire. (...) this factor of meaning was most evident when it was a linguistic meaning (...).’ (Whorf 1956, p. 135)

Let us now focus for the arguments for the above.
3.1.1. Hazardous forms of behavior

3.1.1.1. “Gasoline drums”

One of Whorf’s first observations in the matter was that people behave differently around the “gasoline drums” when they call it either “full gasoline drums” or “empty gasoline drums”.

In the first instance, the behavior is extremely careful and in the second it tends to be careless, e.g. smoking cigarettes, tossing cigarettes stubs around. However, psychical analysis shows that the situation is much more dangerous when approaching the “empty gasoline drums”, since they contain highly explosive vapor.

What causes people to behave in such a way? Although, physically the situation presents itself as hazardous, people still act carelessly. The answer, says Whorf, is given by the linguistic analysis.

The word ‘empty’ is commonly used in two linguistic patterns:

1) ‘(...) as a virtual synonym for “null and void, negative, inert’
2) As a synonym of “without regard to”, e.g. vapor in the container, it is ‘(...) applied in analysis of physical situations’ (Whorf 1956, p. 135)

Thus what is actually happening is that pattern 2) is used to name the above situation, which is then acted out (lived up to) in pattern 1). This is what Whorf calls ‘(...) a general formula for the linguistic conditioning of behavior into hazardous forms.’ (Whorf, 1956, p. 135 – 136)

3.1.1.2. Linguistic meaning causing hazardous behavior – 2nd example

For one worker, the rarely used electric glow heater in his factory had a meaning of a quite convenient coat hanger. At the night the watchman ‘(...) snapped the switch, which action he verbalized as: turning on the light.” He could not see the heater glowing, thought he verbalized as ‘(...) light is burnout out.’ However, the light could not be seen as the old worker’s coat was hung on it. The heater ignited the coat, which in consequence, set fire to the building.

3.1.2. Metaphorical Objectifying

The next step of Whorf’s analysis involves more complex examples of linguistic influence on human behavior through which he conceives a notion called the metaphorical objectifying. In one of those examples presents a situation, in which a big iron kettle of boiling varnish ‘(...) was observed to be overheated, nearing the temperature at which it

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4 A type of storage area used mainly for gasoline and petrol
would ignite. The operator moved it off the fire and ran it on its wheels to a distance, but he did not cover it. In a minute or so the varnish ignited' (Whorf 1956, p. 136). Where is the linguistic influence here? Is it likely to exist? The answer is hidden within the notion of metaphorical objectifying. Whorf understands it as a process of imaginative spatializing of ‘(...) qualities and potentials that are quite non – spatial (so far any spatially perceptive senses can tell us).’ (Whorf 1956, p. 144)

In the above example we deal with the metaphorical objectifying of the ‘cause’, understood as the spatial juxtaposition or contact of ‘things’, leading to the analysis of the situation such as ‘on’ versus ‘off’ the fire (Whorf 1956, p. 136). However, Whorf believes that ‘(...) in reality, the stage when the external fire was the main factor of the past; the overheating was now an internal process of convection in the varnish from the intensely heated kettle, and still continued when ‘off’ the fire. (Whorf 1956, p. 136)

3.1.3. Lessons to be learnt
In Whorf’s opinion, there are two important conclusions that can be inferred from those simple examples:

1) ‘(...) the cue to certain line of behavior is often given by the analogies of the linguistic formula in which the situation is spoken of, and by which to some degree it is analyzed, classified (...)’ (Whorf 1956, p. 137)

2) Linguistic formula is to a large extent built upon the linguistic habits of the group. (Whorf 1956, p. 137)

3.2. SAE and Hopi, i.e. an analysis of large-scale linguistic patterning and its influence on thought, behavior and general perception of reality
Limited ranged of linguistic patterns, demonstrated in the above examples, does not fully explain the mechanism of causal link existing between languages, behaviour and, most importantly, thought.

Thus, the next step of the Whorfian research involves the analysis of the large-scale patterning of grammatical categories. These involve:

i. Plurality
ii. Gender (and similar classifications such as e.g. animate, inanimate)
iii. Tenses
iv. Voices (and other verb forms)
v. Classification of the parts of speech
vi. ‘(...) the matter of whether a given experience is denoted by a unit morpheme, an inflected word, or a syntactical combination.’ (Whorf 1956, p. 137)

I think the last category is the most significant for Whorf because next step of his work involves its detailed analysis. Specifically, Whorf analyses the segmentation of experience categorizing them by number, which leads him to the following conclusions:

i. Category such as number (specifically: singular vs. plural) can be understood as attempt to understand a whole new, large order of experience. (Whorf 1956, p. 137).

ii. What is more, numbers do play an extremely significant role in showing how experience is segmented, e.g. which experience should be called “one” or “several.”

However, Whorf sees a major difficulty in appraising what he calls, ‘(...) far-reaching influence (...)’ (Whorf 1956, p. 137 – 1938). Specifically, our thinker’s diagnosis is that we have an immense difficulty in standing aside from the language we speak. In his own words it is ‘(...) a habit and a cultural “non est disputandum”’ (Whorf 1956, p. 138).

In order to demonstrate it in a clearer way, the author examines the scenario in which one attempts to analyse the structure of a language, not native to him; let us say – an exotic language.

i. It becomes a part of nature

ii. We either verbalize thoughts in our own language, think in our language in order to examine the other or ‘(...) we find the task of unraveling the purely morphological intricacies so gigantic that it seems to absorb all else’ (Whorf 1956, p. 138)

As Whorf sees it, the problem is difficult but feasible. He proposes to change the perspective of the analysis, i.e. look upon our language through the exotic one, not the opposite. Using the exotic language as a form of mirror held in front of our own language. Thus, following the path, chosen by his colleague and teacher Edward Sapir, Whorf decides to examine the language of Hopi, a tribe of Native Americans closely related to the Navaho, the language of which was also one of the main subjects of Sapir’s research.

‘Since, with respect to the traits compared5, there is little difference between English, French, German or other European languages (...)’, the first methodological

5 The interrelation between the concepts such as ‘time’, ‘space’, ‘substance’ and ‘matter’
step in this venture that Whorf takes, is to gather them into one group, which he calls the SAE – “Standard Average European.” Defining the character of the comparison between Hopi and European languages can be essentially put into the form of the two major questions:

i. ‘Are our own concepts of ‘time’, ‘space’ and ‘matter’ given in substantially the same form by experience to all men, or are they in part conditioned by the structure of particular languages?’ (Whorf 1956, p. 138)

ii. ‘Are there traceable affinities between (a) cultural and behavioral and (b) large-scale patterns? (Whorf 1956, p. 138 – 139)

Interestingly enough, Whorf treats the above problem as not clearly formulated. In addition, he did not suspect that the answer to those issues would turn out the way it eventually did (Whorf 1956, p. 139), i.e. he did not expect to come up with strong argumentative structure supporting the linguistic relativity principle.

Let us now analyze the nature of those arguments.

3.3. **Understanding and the perception of time**

We can distinguish three major ways, in which the language influences our understanding of the concept of time and what is most important, how we perceive the time relations.

i. Through the process of objectifying/subjectifying the terms of plurality and numeration

ii. Through the process of objectifying/subjectifying terms of phases of cycles

iii. Through simple temporal forms

**Ad I**

**SAE**

Whorf distinguishes two ways in which plurality and cardinal numbers are applied through the SAE:

a) To ‘real’ plurals, called the ‘(…) perceptible spatial aggregates (…)’

b) To ‘imaginary’ plurals – ‘(…) metaphorical aggregates (…)’ (Whorf 1956, p. 139)

The example that author gives revolves around two utterances: 1) ‘ten men and 2) ‘ten days’. In the first instance, ten man ‘(…) either are or could be objectively perceived as ten, (…) – ten men on the street corner, for instance.’ (Whorf 1956, p. 139)

However, the subject of the second utterance – ten days – cannot be objectively experienced. According to Whorf, only one day is a subject to our direct experience and
the other are conjured from are memory and imagination (Whorf 1956, p. 139). Yet we like to think of the ‘ten days’ as a group. Its existence can be understood only as a mental construct, (Whorf 1956, p. 139). What is the origin of this mental pattern?

The mechanism is the same as in the case of the fire – causing behaviors. According to Whorf our language confused two different situations, using one pattern for both of them. (Whorf 1956, p. 139). When we speak of the cyclic sequence of events such as e.g. ten strokes on a bell or any similar one, we are doing the same thing as with days. This is what happens:

‘Cyclicity brings the response of imaginary plurals. But a likeness of cyclicity to aggregates is not unmistakably given by experience prior to language, or it would be found in all languages, and it is not.’ (Whorf 1956, p. 139)

Thus, what is linguistically influenced here is our awareness of time and its cyclicity. Because it is patterned on the outer world it becomes, in Whorf’s view, objectified. ‘It [outer world] is this that reflects our linguistic usage.’

According to Whorf, the nature of the objectification could be described in the following way:

i. The SAE languages have no distinction between the numbers on discrete entities and the numbers that are – as author puts it – ‘simply counting itself’.

ii. The assumption made through the habitual thought treats the numbers in the latter, ‘(...) as much counted on “something” as in the former.’ This is, according to Whorf, objectification.

No longer is our concept of time in contact with the subjective experience of becoming later and later. It is now understood as countable entities – objectified. In author’s words: ‘A ‘length of time’ is envisioned as a row of similar units, like a row of bottles’. (Whorf 1956, p. 139)

**Hopi:**

The use of plurals and cardinals is quite different in Hopi language. According to both Sapir’s and Whorf’s research, they are used only for those entities, which can form a group that is objective. The utterance such as ‘ten days’ could not be used in Hopi. ‘There are no imaginary plurals, but instead ordinals used with singulars.’ The statement such as e.g. “They stayed twelve days” is transformed to the utterance such as, “They stayed until the thirteenth day.”
In Whorf’s example the speaker of the SAE would have no problem in saying, “Ten days is greater than nine.” However, in the Hopi language, the sentence becomes “the tenth day is later than the ninth.” This language does not lay down any patterns that would objectify the subjective awareness of “becoming later.” For Whorf, this subjective “becoming later” ‘(...) is the essence of time’, i.e. the Hopi concept of time.

**Ad II**

**SAE**

The second way, in which the languages in the SAE group influence the perception of time, is deeply connected with the first one. Specifically, it is based on the objectification of all the terms relating to phases, cycles etc. Using Whorf’s terminology, we are dealing here with the objectification of the subjective experience of duration. In the SAE, ‘such terms as ‘summer’, winter, September, morning, noon, sunset (...) are pluralized and numerated like nouns of physical objects. (...) Our thought about the referents of such words hence becomes objectified.’ (Whorf 1956, p. 139)

What is more, the use of the phase nouns, established, what Whorf calls ‘(...) a formless item, ‘time’. How is it possible?

According to the author, we have made it possible through the usage of ‘a time’ expression. The analysis of the pattern that governs the usage of the expression, presents itself as follows. Whorf treats the ‘a time’ expression as denoting a certain phase or an occasion and governed by the pattern of mass noun. Therefore, concludes author, ‘(...) with our binomial formula we can say and think “a moment of time, a second of time.” (...) we are assisted to imagine that ‘a summer’ actually contains or consists of such – and – such a quantity of ‘time’” (Whorf 1956, p. 142). In other words, the usage of the phase nouns establishes an objectified conceptualization of the time cycles.

**Hopi**

The terms, which in the SAE could be understood as phase terms, such as e.g. ‘evening, summer, afternoon’, in the Hopi language play a role of – ‘(...) to use the nearest SAE analogy’ – a kind of adverbs.

Such words:

- Are a distinct part of speech
- Are not governed by locative patterns like, e.g. ‘in the morning’

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6 ‘(...) Just as from ‘a summer’ we make ‘summer’ in the pattern of the mass noun. ‘ (Whorf 1956, p. 142)
• Contain no morphemes, e.g. SAE expression such as ‘in the morning’, means ‘when it is morning’ or ‘while morning – phase is occurring’

The temporals in presented in the last feature not at all used as nouns, or subjects, or objects (Whorf 1956, p. 142). We will not find a single trace of utterances such as ‘summer is hot’ or ‘it is hot in summer’ in the Hopi language. Instead, we will encounter such expressions as ‘summer is only ‘when conditions are hot, when heat occurs.’ Thus, once again we can conclude, that through the influence of language, the concept of time in the Hopi culture knows ‘(…) no objectification, as a region, an extent, a quantity, of the subjective duration feeling’ (Whorf 1956, p. 142). However, the most important lesson to be learnt from this part of the argument, is that in the Hopi language there is no suggestions about time, apart from, what Whorf calls, the perpetual “getting later” of it.’ (Whorf 1956, p. 139)

Ad III

Whorf finishes his discussion on the relation between language and time perception with the analysis of the temporal forms of verbs in the SAE and Hopi.

SAE

According to our thinker, the three – tense system found in the SAE governs our conceptualization and perception of time. This particular system is connected with ‘(…) the larger scheme of objectification of the subjective experience of duration (…)’ (Whorf 1956, p. 139). As we already know from the previous examples in the argument, this objectification allows us to think of time as units. Whorf confirms this previous claim:

‘Imagination of time as like a row harmonizes with the system of three tenses (…).’
(Whorf 1956, p. 139)

However, if we want to examine the feeling of duration as it is experienced, the two – tense system of “earlier and later” seems to correspond much better. From here, Whorf moves to the analysis of what the three tense – system can tell us about consciousness or rather what it cannot. Specifically, he claims that in consciousness we will not find past, present, future, ‘(…) but a unity embracing complexity.’ What is more, the further claim assumes that ‘(…) everything is in consciousness, and everything in consciousness is together.’

However, Whorf does not deny that we can construct and, as he puts it, contemplate in thought, the three – tense system of past, present, future. He even shows an example of such a construction:

Assuming that in consciousness, we can distinguish two features such as:
1) Sensuous
2) Non-sensuous,

We may:

- match the present with the feature 1) – i.e. seeing, hearing, touching are in the domain of here and now;
- match the past with the feature 2), i.e. the realm of imagination and memory
- match the future with the realm of intuition, beliefs and also, uncertainty

The construction that we just presented is valid, however, according to Whorf, artificial, as he treats consciousness as the unity of all experience. Yet we will keep on constructing such mental patterns. ‘This is what our general objectification tendency leads us to do and our tense system confirms’ (Whorf 1956, p. 144). Thus, we can say that the language influence on the perception and understanding of time is indeed really significant.

**Hopi**

In the Hopi language, we there are no verbs controlled by “tenses” like in the SAE. Instead, the Hopi features validity forms, which are a kind of assertions, then aspects, and clause–linkage forms or modes.

The third kind of these forms is the most significant as the ‘(...) modes denote relations between the clauses, including relations of later to earlier.’ (Whorf 1956, p. 145)

Thus, we can assume that Hopi do perceive the two – tense relations of earlier and later, which – to some extent - substantiates Whorf’s earlier claim.\(^7\)

As we already know there is no room for the objectification of time in the Hopi language. In this step of his analysis the author sheds new light on the matter.

‘The duties of three – tense system (...) are distributed among various verb categories, all different from our tenses and there is no more basis for an objectified time in Hopi verbs than in other Hopi patterns;(...)’. (Whorf 1956, p. 145)

Thus, there is no place for artificial mental constructions and distinctions, in regards to time, as in the SAE.

### 3.4. The concepts of space and matter

#### 3.4.1. SAE

According to Benjamin Whorf, in the SAE language group we have two basic kinds of nouns, which denote physical objects:

- Individual nouns

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\(^7\) In the Hopi language there is no suggestions about time, apart from, what Whorf calls, the perpetual “getting later” of it.” (Whorf 1956, p. 139)
Mass nouns
The first kind denotes bodies with definite outlines: a tree, a stick, a man, a hill. The second however, denote ‘(...) homogenous continua without implied boundaries’ (Whorf 1956, p. 140). Whorf distinguishes the following features of this distinction:

- It is marked by linguistic form, e.g. ‘mass nouns lack plurals’
- It is ‘more widely spread in language than in the observable appearance of things.’ (Whorf 1956, p. 140)
- Most importantly however, it is ‘somewhat’ forced – by a particular linguistic pattern – on our description of both events and things.

This linguistic pattern is based on the individualization of the mass nouns by a common container formula. The structure of this container is: individual noun plus a similar relator (e.g. ‘of’ in English), thus these expressions can be used as examples: ‘glass of water, cup of coffee, bottle of beer, stick of wood etc.’

According to Whorf, the most significant features of the formula are:

- The similar relator has ‘(...) an obvious, visually perceptible meaning (“contents”), which ‘influence our feeling about the less – obvious type – body formulas’, such as e.g. ‘lump of dough’
- The relator has two functions:
  i. It denotes contents - in the obvious cases such as e.g. ‘ a cup of tea’
  ii. It “suggests” contents – in the unobvious cases, e.g. ‘chunks of wood’

The second function of the relator is the reason why we think of e.g. ‘lumps, chunks, blocks, pieces etc. as containing ‘(...) something, a “stuff”, “substance”, or “matter” that answers to the “water”, “coffee”, or “flour” in the container formulas’ (Whorf 1956, p. 141). This brings Whorf to an interesting, yet in my opinion controversial, claim about the nature of philosophical concepts of ‘substance’ and ‘matter’. He considers them as naïve ideas, which can be instantly accepted by the ‘common – sense’ (Whorf 1956, p. 141). We will come back to this claim later in the thesis.

What does the above individualization formula tell us about the analysis of space? The answer is simple. According to Whorf, we do not analyze and conceptualize space as a single entity but a set of concrete “things”, limited by their shape, containers etc.
Hopi

Formally, the language of Hopi has its own class of nouns. However, it does not contain the subclass of the mass ‘noun’.

In addition, all of the nouns possess:

- Individual sense
- Singular form
- Plural form

What is more, ‘(...) they imply indefiniteness, but not lack, of outline and size.’ For example, the noun such as ‘water’ refers to a certain quantity of water, a specific mass of the liquid etc. It does not mean ‘(...) what we call “the substance water.”’ (Whorf 1956, p. 141)

What sort of implications do the above facts have on the conceptualization matter and space in the Hopi culture?

Firstly, they are no need for the detailed description of the shape or container of the certain objects. ‘Since nouns are individual already, they are not individualized by either type-bodies or containers. (...) The noun itself implies a suitable type – body or container.’ (Whorf 1956, p. 141). Unfortunately, Whorf does not explicitly reconstruct how Hopi perceive spatial relations. However, I think we are able to infer this from what he has said about the object description. Specifically, the fact that the description of the objects does not emphasize its physical traits such as e.g. shape, or its location in a certain container, indicates that the physical limitations of things do not play a significant role in Hopi’s perception of space. Therefore, I believe that they see space as a bigger whole, and not as a set of concrete things, which can be lined in a row.

3.5. Microcosm - explaining the concept of thought

During my lecture of Whorf’s most important article The Relation of Habitual Thought and Bahavior to Language, I was both surprised and troubled by the fact nearly through the whole reading he did not specifically define what he meant by the ‘thought.’

Fortunately, it turned out that the article presents Whorf’s strive to establish the concept of thought. He presents in at the very end of the paper.

In the text we can encounter two notions that involve the usage of the word ‘thought’:

1) “Habitual thought”
2) “Thought world”
Since, according to Whorf, language plays an essential role in shaping human thought, I assumed that the two notions presented different stages or ways of the linguistic influence. However, there is more to that:

‘By “habitual thought” and “thought world” I mean more than simply language, i.e. than the linguistic patterns themselves. I include all the analogical and suggestive value of the patterns (e.g. our “imaginary” space and its distant implications), and all the give – and – take between language and culture as a whole.” (Whorf 1956, p. 147)

Thus, the notion of “thought world” is defined as: ‘(…) the microcosm that each man carries about within himself, by which he measures and understands what he can of the macrocosm’ (Whorf 1956, p. 147). If I understand these claims correctly, thought, according to the author, is therefore a constant process of analysis of the surrounding world, which strongly relies on language.

3.6. What have we learnt?

Whorf’s aim was to show how language changes the way we conceptualize reality, behave, and examine the range of such an influence. In his terminology, the main question is, how does the linguistically conditioned microcosm shape our understanding of the macrocosm? According to Whorf, time, space and matter are the most significant features of the latter. Contrasting two linguistic groups – the Standard Average English and the exotic Hopi language - showed the mechanisms of the process.

3.6.1. SAE

Here, the reality (macrocosm) is largely understood in terms of “things” and additional modes of extensional existence. (Whorf 1956, p. 147)

The binomial formula\(^8\) is the mechanism used to conceptualize any existing object as a ‘(…) spatial form plus a spatial formless continuum’, which, in Whorf’s view, has a direct relation to the form, in the very same as ‘(…) contents are related to the container’ (Whorf 1956, p. 147). What is most interesting, even if the existent is nonspatial - such as time for instance - they are specialized and in addition, ‘(…) charged with similar implications of form and continuum.’ (Ibid.)

3.6.2. Hopi

Through the language of Hopi, the reality is, largely conceptualized in terms of “events” (the process of constant becoming), which has to ways, in which we can refer to it:

\(^8\) See subpar.: 3.4.
1) **Objectively** – but only if we are dealing with *perceptible physical experience*. Here the events, ‘(...) are expressed mainly as outlines, colors, movements (...)’ etc.

2) **Subjectively** – the events – physical and non – physical are considered, in author’s own words, ‘(...) the expression of invisible intensity factors, on which depend their stability and persistence (...)’ (Whorf 1956, p. 147).

What is, in my opinion, the most fascinating thing that can be inferred from the above quote is that all the objects, all the existents, do not just “constantly become later and later” in the same way, but they do it differently. To portray this, Whorf uses a metaphor of a plant.

Specifically, they ‘(...) do so by growing like plants, some by diffusing and vanishing, some by a procession of metamorphoses, some by enduring in one shape till affected by violent force.’ (Whorf, 1956, 147). Each one manifests the power of its own duration. However, the simple but significant question remains, i.e. was Benjamin Whorf right about his conclusions? Does language really influence our thinking in such a strong way? If not, where did he make a mistake and what is the true connection between thought and language, if there is any?

The debate to answer those questions still rages on. Let us now give it a closer look.
Chapter II

When presenting the structure of an idea, one of the most difficult things to achieve is to demonstrate to what extent it influences other ideas in a particular field of research, to what extent it is immune to critique, and how the idea reacts to swift development in knowledge and in vigorous, modern debates.

This and the next Chapter attempt to describe the way the principle of linguistic relativity presents itself in the light of these issues. The best way to make such an attempt is to reconstruct modern debate along the causal links between thought and language.

The Critique

In this Chapter, I will present the part of the debate, which explicitly, or in some cases implicitly, disagrees with the Whorfian view, presented in Chapter I. Specifically, I will in detail elaborate on the two, in my opinion, the most significant accounts, which stand against the linguistic relativity, i.e.:

1) Noam Chomsky’s critique
2) Brian Berlin’s and Paul Kay’s universalist model of colour terms’ evolution.

Since this great thinker cannot defend his points against charges, brought by his opponents, I have decided to do it for him by making responses, I think he would have made if had he been alive and was acquainted with the contemporary philosophical tools, to each of the charges, or arguments.

1. Noam Chomsky against the Whorfian view:

Reconstruction of a modern discussion, lead on edges of philosophy and linguistics, would not be complete if stripped of Noam Chomsky’s views.

An acclaimed linguist, Chomsky has expressed his explicit critique of the principle of linguistic relativity in the Preface to the Language and Cognition by Adam Schaff.

1.1. The reconstruction and arguments

Chomsky states that, ‘The hypothesis of linguistic relativity as formulated particularly by Whorf, discussed here at length, is one that has given rise to much interesting thought and speculation’ (Chomsky 1973).

In my opinion, in spite of not questioning Whorf’s position in the above statement, Chomsky uses the word of hypothesis in it, incorrectly; Benjamin Whorf did not formulate
any hypothesis. He did, however, formulate the principle. Every notion occupies a relevant place in the system of scientific nomenclature, which drawn much of Whorf’s attention.

Then, Chomsky takes up reconstructing the essential idea lying behind Whorf’s views.

‘Whorf argues that the structure of language plays a role in determining a world view, and supports his argument by contrasting the world –view characteristics of speakers of Standard Average European (SAE) with that of speakers of various American Indian Languages. As Schaff notes, the hypothesis practically rests on the treatment of the categories of time and space in Hopi.’ (Chomsky 1973)

My reservation about the above opinion - Whorf would have argued against it too - is that Chomsky does not define what the word of determining means for him, when it is crucial here. Thus, let us shortly return to what has been said in Chapter I.

The linguistic determinism is the second underlying claim of the linguistic relativity principle. However, its validity is strongly supported by the first premise of linguistic difference. Together they are the pillars of the syllogism, from which linguistic relativity can be rightfully inferred.

What is more, we have distinguished two forms of linguistic determinism, weak and strong. Although Whorf did not explicitly mention, which form is used to substantiate his main claim of linguistic relativity, I think that his anthropological stance – placing human being and his relation to culture and language in the centre of his interests – indicates that linguistic influence strongly relies on cultural realities. Thus, the linguistic determinism here is rather weak than strong, i.e. the concepts can be encoded linguistically through culture.

Therefore, I think that Chomsky should be more careful in his treatment of this multi – sided concept, if he wants to provide us with an accurate reconstruction of the concept followed by its critique.

There is one more thing that seems quite confusing in the above quote, i.e. the framework of analysis used by Chomsky. The first sentence indicates that he understands the Whorfian concept through the autonomous syntax position. Whereas Whorf himself,

9 The notion is meant as a suggested solution or explanation based on empirical evidence.
10 The point 2.2., p. 5 - 6
11 Understood as: ‘An approach of generative grammar in which the syntactic component of a grammar is viewed as existing or operating independently of the semantic component and abstract syntactic
as we already know, understood language through its constant relation to culture and culture through constant relation to language. He writes: ‘(...) they have grown up together, constantly influencing each other’. However, he emphasises the dominant role of language in this, as he calls it, partnership and ‘(...) this is so because a language is a system, not just an assemblage of norms (Whorf 1956, p. 156).’

Therefore, I wonder if the change of framework done by Chomsky, favoured his precise understanding of what Whorf had to say and what is more, the adequate critique of his stance.

Moving on further with his reconstruction of the Whorfian concept, Chomsky writes:

‘The category of space is similar in Hopi to SAE, but the Hopi, Whorf argues, do not have and intuition of time as smooth as flowing continuum, with a past, present, and future, in our sense. The basis for this distinct world – view is provided by the categories of their language, which does not formally provide the past – present – future analysis of verbs forms, as in SAE.’ (Chomsky 1973)

Once again, Chomsky fails to notice the very close linkage between language and culture, which lays the first serious foundations for the distinct worldviews of SAE and Hopi. Whorf argues:

‘I find it gratuitous to assume that a Hopi who knows only the Hopi language and cultural ideas of his own society has the same notions, often supposed to be intuitions, of time and space that we have and that are generally assumed to be universal.’ (Whorf 1956)

However, let us now leave the characteristics and move to the two significant charges that Chomsky established against Whorf. These are:

1) No evidence for a difference between the linguistic structures of SAE and Hopi
2) Incorrect description of the SAE

Ad. 1

In the direct quote, Chomsky states: ‘(...) it has been argued that Whorf gives no evidence for a difference in linguistic structure, but, rather, begs the question by postulating the difference on the basis of the difference in the formal structure of Hopi and representation is not equivalent to semantic representation.’ Source: http://dictionary.reference.com/browse/autonomous+syntax
SAE. Here, then is a point where further research might be proposed (...)’ (Chomsky 1973).

Possible responses:

i. The problem disappears when one changes the framing, from the autonomous syntax to an anthropological approach, i.e. where the linguistic structures of Hopi and the SAE are necessarily embedded in their distinct cultural realities. In my opinion, this relation has been inaccurately understood as a formal structure only.

ii. If the framing remains unchanged, we could still point to the direct differences in the linguistic structure. The most important are:

- Temporal forms of verbs, i.e. three tense system of the SAE vs. the validity and close – linkage forms of the Hopi
- Terms of plurality and numeration, influencing the process of subjectifying (Hopi) and objectifying (SAE) spatial and time relations
- Terms of phases and cycles
- Individual and mass nouns distinction in the SAE / Individual sense, Single and Plural forms in Hopi

Ad. 2

‘(...) there is (...), a much more fundamental defect in Whorf’s argument, namely, that his description of SAE is incorrect. In English, for example, there is no structural basis for the past – present – future world view that Whorf’s attributes, quite correctly, to the SAE speakers (Chomsky 1973).

In addition, according to Chomsky, formal analysis of the English language demonstrates:

i. Past – present distinction

ii. Set of aspects and class of models from which one is used as a tool for expression the future tense ((...) ‘among other devices that serve this purpose’).

According to the author of Language and Mind when we approach English language from the Whorfian perspective, we are bound to conclude that ‘(...) an English speaker has no concept of time as doubly infinite line (...) but rather he conceives of time in terms of basis dichotomy between what is past and what is not yet past, in terms of an
aspectual system of subtle sort, and in terms of an aspectual system of a subtle sort, and terms of superimposed and independent system of modalities involving possibility, permission, ability, necessity, obligation, future (Chomsky, 1973.).

Again, according to Chomsky, the above conclusion is an absurd and proves merely that our concept of time is not affected and, therefore, not determined by the language. Chomsky’s argumentation is very complex and, however careful one must be while making a response to it, I think that a possible response should read as the below.

What particularly draws my attention in the argumentation is that in its first part, where Chomsky formulates the problem that Whorf’s description of the SAE is incorrect, it is hard to determine with sufficient precision where the description of the SAE is really incorrect. Is the entire description flawed, or just a part of it, e.g. the concept of time? - Chomsky’s understanding is not as precise as it should have been.

His further analysis of English not only brings no answer to the above question but also raises more doubts.

Whorf has never used English language as an example typical for the SAE group. If an attempted were to be made to fully endorse Chomsky’s example, I believe, English should be treated as such there. Here, however, the choice of English is Chomsky’s the most unfortunate one. Latin would be more appropriate because its structure contains a structural basis for the past-present-and-future distinction, which Whorf considers as one of the fundamental features of the SAE language group and the world view of its speakers. As we have already learned, Chomsky agrees with this description.

The fact that the English language lacks the basis for the above distinction does not invalidate the entire SAE description. It just demonstrates that (1) English should be considered as not typical, unusual for the SAE, and that (2) the language should not be used as the basis for a detailed analysis of this linguistic group’s general structure.

What is more, further analysis of Chomsky’s argumentation - particularly the paragraph in which he analyses the English language from, as he claims, the Whorfian point of view, and conclusions to which it leads to – brings us back to the autonomous syntax framing.

By adopting the Whorfian point of view, when analysing the English language, Chomsky has reached, as he truthfully admits, an absurd conclusion (see: the quotation above) that an English speaking person has no concept of time meant as an infinite line, but he treats the concept rather in terms of dichotomy and aspectual systems. This
conclusion has become a basis for the author of the *Language and Mind* to claim that the concept of time is not linguistically determined in the SAE.

Why are we dealing with the autonomous syntax framing at this point? There are two reasons:

**First** is that Chomsky builds the second part of his argumentation upon the claim that it is the Whorfian approach to language that brings us to the absurd conclusion. However, in the reconstruction of Benjamin Whorf’s views he points out, quite rightly, that according to the famous linguistic relativity proponent ‘(…) the structure of language plays a role in determining a world view (…)’ (Chomsky 1973).

How can it be that the use of the same approach [Whorfian] produces two conflicting results and make us draw two conflicting conclusions? Is Chomsky unintentionally inconsistent here, or is he intentionally employs another approach in his analysis? The only different approach, used by Chomsky in this research study, has been earlier defined as the autonomous syntax.

**Second** is that the final, radical claim of the argumentation that that linguistic categories\(^\text{12}\) have no influence on our concept of time and, consequently, on reality (our world view), in my opinion, falls in with an autonomous syntax framework.

1.2. Chomsky’s critique – lessons to be learned

As has been demonstrated in above paragraphs, the critique of Benjamin Whorf’s views, presented by Chomsky, is not flawless. However, it has an influence on my consideration of the general structure of the SAE language group. This includes:

- The temporal forms of verbs
- Nouns of physical quality
- Notions of naming
- Phases of cycles
- Habitual thought

Featuring only minor differences within the above subject matters and having a similar level of influence on the concepts of time, space and matter, these languages have been automatically assigned to the SAE group.

However, in his analysis of the English language, Chomsky proves that the English structure of temporal forms is different from similar structures existing in other SAE languages. Therefore, each of the languages must reconsider its place taken in the group.

\(^{12}\) Following the pragmatic tradition of thought, particularly the one represented by Peirce, categories are meant as meaningful predicates.
Either following the above criteria, English is the SAE’s special-case-language, or it should be considered as not belonging to the group.

Hence, Whorf might have made a mistake in the group criteria or in the assignment of English to the SAE.

2. Colour terms and qualia

The proponents of the universalist views on the colour terminology took the next significant step in the critique of the linguistic relativity, which delivers, in my opinion, the strongest arguments against the account.

To opposition to the above arguments can be, in my opinion, built upon the contemporary philosophical accounts that argue against the existence of qualia.

2.1. Brent Berlin and Paul Kay

The strongest account of universality of colour terms was presented in the 1969 book, *Basic Color Terms: Their Universality and Evolution*, written by two American researchers – linguist Paul Kay and anthropologist Brent Berlin.

With the clear goal being to challenge the linguistic relativity principle, the study attempts to achieve this by launching attacks against the way the view treats issues regarding colour terminology.¹³

‘Proponents of this view frequently offer as a paradigm example the alleged total semantic arbitrariness of the lexical coding of color. We suspect that this allegation of total arbitrariness in the way languages segment the color space is gross overstatement.’ (Berlin & Kay 1969, p. 2)

2.1.1. Basis for the Research

1) The research is based on the claim that universal rules exist, capable to govern the number of colour terms and the way they can be used. ‘It [the research] strongly indicates that semantic universals do exist in the domain of color vocabulary’ (Berlin & Kay, 1969).

2) Speakers of twenty languages, coming from different language families have been used to obtain data.¹⁴

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⁶ Figures 1 and 2 in the Berlin and Kay’s book *Basic Color Terms: Their Universality and Evolution*, represent the entire and detailed spectrum of the data.
3) Kay and Berlin distinguish eleven universal categories of colour: black, white, grey, brown, yellow, orange, red, green, pink, purple, and blue.

4) The criteria, which the two researches use in order to tell if a particular colour term can be consider as a category, are the following:
   i. Monolexemity, i.e. the morphological simplicity
   ii. Term’s meaning (signification) is not included in the signification of another colour term.
   iii. The possibilities of term’s application must not be narrowed to one specific class of objects.
   iv. Psychological saliency for the informant

   Indices of psychological of psychological salience include, among others, (1) a tendency to occur at the beginning of elicited lists of color terms, (2) stability of reference across informants and across of use, and (3) occurrence un the ideolects of all informants.' (Berlin & Kay 1969, p. 6)

   However, the assumption that is, in my opinion, the most relevant philosophically is the following. According to the data obtained, our subjective experience of colours, our perception roughly the same. Thus, Berlin and Kay argue for the existence of universal linguistic norms that govern the process of describing

   In the case of linguistic forms that raise doubts, the following principles support the above criteria:
   i. The linguistic forms that raise doubts should possess the same potential of distribution as the basic, previously established colour terms do, e.g. we can say ‘(…) reddish but not salmonish’.
   ii. Colour terms, which name objects that possess this colour, as a main feature of its characteristics, should be treated with extra care.
   iii. Since languages have been evolving significantly, the ‘(…) recent foreign loan words may be suspect.’ (Kay & Berlin, 1969)
   iv. When it is hard to determine the lexemic status, morphological complexity comes as a secondary criterion.

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15 Informant – Native speaker who ‘(…) acts as a linguistic reference for a language being studied.’ He is a senior interpreter, demonstrates native pronunciation, provides grammaticality judgments regarding linguistic well-formedness, and may also explain cultural references and other important contextual information to researchers from other cultures studying the language.’ (Newman, P., Ratliff, M., 2001)
Let us assume that a doubt has been raised, expressed by this question – what if a particular language has less than eleven colour categories? In their research, however, Berlin and Kay wisely deal with this and indicate that:

1) The terms for white and black are in lexicons of every language and
2) If language contains:
   i. Three colour terms, there is a term for red among them,
   ii. Four colour terms, there is a term for yellow or green among them, but never for both,
   iii. Five colour terms, there are terms for both yellow and green among them,
   iv. Six colour terms, it contains a term for blue,
   v. Seven colour terms, it contains a term for brown, and
   vi. Eight or more, there are terms for purple, pink, purple orange, and grey, or for their combination.

2.1.2. Phases of colour term evolution

Additionally to the above claims, the two researchers have also distinguished seven universal stages of the evolution of colour terms, the distinction being based:

‘(...) in part on the universality of the eleven basic category foci, in part on the non-randomness of their distribution among contemporary languages (and certain logical consequences of the particular distribution). (Brian and Kay 1969, p. 14)

Hence, the phases are a natural, methodological consequence of the previous claims. The researchers also believe that creating stages of the evolution of colour terms’ categories should reveal the mistake at the basis of the linguistic relativity account. (Berlin and Kay 1969, p.14)

Let us have a closer look at the stages.

i. **Stage I**

According to the researchers, Stage I of the evolution is represented only by two terms - black and white, but particularly by ‘(...) black plus most dark hues, and white plus most light hues.’ (Black and Kay 1969, p. 17)

ii. **Stage II**

In this stage, ‘(...) a third category emerges which we call red. Red includes all reds, oranges, most yellows, browns, pinks, and purples (...).’ (Berlin and Kay 1969, p. 17)
iii. **Stage III**

There is an observable reduction in the scope of white and black. The new category that emerges is either green or yellow.

iv. **Stage IV**

Whatever the category - green or yellow – they have not emerged in the Stage III but were established in Stage IV. In addition, ‘(...) black and white continue to be deprived of hue reference, becoming increasingly restricted to neutral values.’ (Barlin and Kay 1969, p. 19)

v. **Stage V**

Blue emerges while black and white reduce themselves to their natural values.

vi. **Stage VI**

It is the last stage, ‘(...) at which a single focus appears.’ (Barlin and Kay 1969, p. 19). Brown is introduced.

vii. **Stage VII**

It includes eight, nine, ten, or eleven–term systems. What is most important here is that it is the only Stage represented by all twenty-language analysis made by the two researchers.

The above distinction is supported by the method of the internal linguistic reconstruction of basic colour terms.\(^{16}\)

However, under these purely linguistic assumptions lies a claim that I find philosophically most relevant for the Berlin/Kay account. According to the data obtained by the two researchers the private experience of colours, their perception is roughly, the same throughout every linguistic group tested in the experiments. Specifically, when presented with the specific colour category, the representatives of each linguistic group selected the identical focal hue (Berlin & Kay 1969, p.32 – 33, 136 - 139).\(^{17}\) Thus, if our private colour perception is roughly the same, we establish the basis for the universal rules of its linguistic description.

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\(^{16}\)The two most significant assumptions of this method, according to Berlin and Kay, are:

1) Colour terms ‘(...) that can be show on linguistic grounds to be loan words are likely to be more recent additions than native color terms.’ (Berlin and Kay 1969, p. 37)

2) Colour terms ‘(...) that are analyzable are more recent additions than unanalyzable terms. (Ibid.)

\(^{17}\) For e.g. the term „red” corresponded to the same shade in the Munsell colour system.
The above findings are supported by later research carried out by German psychologists, Kessen, Bornstein, and Weiskopf and presented in their 1976 paper *Color vision and hue categorization in young human infants.*

I think that the description of the Berlin and Kay’s position, included above, meet requirements of my thesis, yet the question remains - how can the relativistic account as conceived by Whorf withstand the test of the above arguments?

### 2.1.3. Possible and contemporary responses:

I would go along two major approaches to present a critique of the above account and to defend the linguistic relativity:

1) Undermine the methodology of Berlin’s and Kay’s research and the terminology they use and
2) Use achievements of the contemporary research on qualia and colour perception, i.e. through the anti–qualia arguments.

**Ad 1**

Both Barbara Saunders and John Lucy have elaborated in detail on methodological mistakes and flaws existing in the Berlin-Kay argumentation. Hence, I think, it would be worth reconstructing in detail their accounts.

Saunders’ critique is based on the following claims:

i. The method of translation, acquired through studies of the 20 (78 in their further researches) languages has not been tested directly and with adequate attention.

ii. The use ‘*Munsell colour system*’ has not been effective. *(…) use of this chart exemplifies one of the mistakes commonly made by the social sciences: that of taking data-sets as defining a (laboratory) phenomenon which supposedly

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20 System conceived by Prof. Albert H. Munsell in the first decade of the XXth century. It analyzes and specifies, colours which are based on the three following dimensions:

i. Hue
ii. Lightness (value)
iii. Colour purity (chroma)
represents the real world”, and entails "taking a picture of the world for the word and then claiming that that picture is the concept.’ (Saunders 1995)

iii. The cases of anomalous colours21 have been neglected.

John Lucy’s claims are very similar to the presented above, with the only new one being that the grammatical distribution of terms and the range of their reference have been neglected. They ‘(...)"are routinely ignored in research on color terms which focuses primarily on denotational overlap across languages without any consideration of the typical use of the terms or their formal status" (Lucy 1997).

Ad 2

My response to the Berlin-and-Kay position goes along the path established by Daniel Dennett’s, Paul Churchland’s, David Lewis’, and Micheal Tye’s arguments against the existence of qualia.22 Although these great philosophers have never explicitly argued against the universalist claims on the colour term evolution, I believe that their argumentation provides a perfect tool of defence against accounts like the presented by Berlin and Kay. Two underlying assumptions can be used to set up a bridge linking the ostensibly unrelated domains of research:

(1) Although colours function in public domain, experiencing them is a strictly private, subjective matter, a fact which I am sure, Berlin and Kay would not deny. Their experiments might have examined linguistic groups, but they have done the research on the basis of individual representatives, and

(2) Being subjective and conscious, our private experience of colours does possess the qualia.

Hence, my experimental argument is:

i. According to Berlin and Kay our private experience of colours is roughly the same and it creates the need for universal rules, which would govern the experience’s linguistic description,

ii Qualia can be considered as one of the most significant features of the private colour experience,

iii Research done by Dennett, Churchland, Lewis, and Tye brings about to two significant claims:

21 For further details see: W. A. H. Rushton, Pigments in anomalous colour vision, Trinity College, Cambridge
a. **Weak** – Qualia are features with no unique properties\(^{23}\) (Dennett 198)
or, putting it more radically,

b. **Strong** - Qualia do not exist. (Tye 2000),

iv. If the anti–qualia arguments proponents are right in their conclusions, the
experience of colour loses one of its most profound properties, and

v. If so, the universal rules of describing such an experience, as meant by
Berlin and Kay, are no longer applicable.

To substantiate the argument let me turn to the arguments that proponents of the
anti–qualia research give to support their conclusions. For the purposes of my thesis, I will
present the arguments of Daniel Dennett and Micheal Tye, the most significant proponents
of the weak and strong claim (premise III), respectively.

Daniel Dennett identifies four basic properties, commonly attributed to qualia:

i. Ineffability, i.e. their apprehension and communication relies only on
direct experience,

ii. They are intrinsic, i.e. they do not change in respect of the direct
experience’s relation to other experience or things,

iii. Privacy, i.e. the interpersonal comparison between the qualia is
systematically impossible,

iv. They are directly apprehensible in consciousness, i.e. to know a quale
is to know how to experience the quale.\(^{24}\)

According to Dennett, the above definition falls apart when we try to apply it
practically. Calling it *intuition pumps*, Dennett employs thought experiments, which apply
the concept of qualia to the worlds of psychology, psychological experiments and,
moreover, the neurosurgery.\(^{25}\)

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\(^{23}\) *No unique properties* – Properties, which do not stand out in any particular way from other properties of
our conscious perceptual experience. As Dennett puts it: ‘My claim (…) is that conscious experience has no
properties that are special in any of the ways qualia have been supposed to be special.’ (Dennett 1988, p. 1)

\(^{24}\) Because the perceptual system functions in the same way in every physically and mentally healthy human
being, in my opinion, it will not be methodological abuse, if the fifth property, i.e. *universality*, is attributed
to qualia.

\(^{25}\) For further details see:


One of the most widely known of Dennett’s thought experiments is the updated version\textsuperscript{26} of the ‘inverted spectrum’ experiment, or the fifth intuition pump, called the neurosurgical prank, which is supported by the sixth intuition pump—the alternative neurosurgery. It can be reconstructed in the following way:

When we are asleep ‘evil neurosurgeons’ operate on our brains in order to invert our qualia experience. We wake up only to find out that we perceive grass as red, sky as yellow, etc. ‘No one else notices any color anomalies in the world, so the problem must be in you. You are entitled, it seems, to conclude that you have undergone visual color qualia inversion (and we later discover, if you like, just how the evil neurophysiologists tampered with your neurons to accomplish this).’ (Dennett 1988, p. 6)

Dennett says, however, it is a false assumption. He claims that we should be aware that something is going wrong, but it is impossible to know whether the evil scientists have really tampered with our qualia spectrum and inverted it, or simply inverted our connections to the memories of the past qualia.

Dennett claims that to show that qualia is a unique feature of our experience, one has to prove that:

i. Contrary to modifications made to something else, qualia was subjected to rather specific modifications and

ii. There is a significant difference between having and not having a modification in qualia.

However, as we have already learned, the above are impossible to prove. Hence, concludes Dennett:

*If there are qualia, they are even less accessible to our ken than we had thought. Not only are the classical intersubjective comparisons impossible (...), but we cannot tell in our own cases whether our qualia have been inverted--at least not by introspection.’* (Dennett 1988, p. 7)

Now, what is the opinion of Michael Tye? In his *Consciousness, Color and Content* paper\textsuperscript{27}, Tye claims qualia does not exist. According to him, in the general world, our experience of the objects is ‘transparent’ meaning that regardless of our individual perception of particular objects, we cannot deny that in reality the objects are still in front

\textsuperscript{26} ‘The idea seems to have occurred to several people independently (Gert, 1965, Putnam, 1965, Tayler, 1966, Shoemaker, 1969, 1975, Lycan, 1973). Probably Block and Fodor (1972) have it in mind when they say “It seems to us that the standard verificationist counterarguments against the view that the ‘inverted spectrum’ hypothesis is conceptually incoherent are not persuasive.” ’ (Dennett 1988, p. 6)

\textsuperscript{27} Tye, M.,(2000) *Consciousness, Color and Content*. Cambridge MA: MIT Press
of us. The idea that something can intervene in this direct process of objects’ perception, i.e. the qualia, is according to Tye, ‘(...)a massive error’, or as he put it later ‘(...) it is just not credible that visual experiences are systematically misleading in this way’. (Tye 2000, p. 46)

Under the influence, as I believe, Dennett, Tye claims that we are not capable to be aware of qualia, i.e. ‘(...) the only objects of which you are aware are the external ones making up the scene before your eyes’ (Tye 2000, p. 47). However, as we have already known, Tye claim appeared to have been much more radical – we cannot be aware of not only the qualia but they also just do not exist. As he puts it, there are ‘(...) no such things as the qualities of experiences’. (Tye 2000, p. 47)

In fact, the features, which until now, have been considered as qualia are ‘(...) qualities of external surfaces (and volumes and films) if they are qualities of anything’ (Tye 2000, p. 48). This assumption enables Tye to think about the experience of our conscious as securely based because there is nothing that could distort, or cause the loss of the direct experience of reality and its objects.

How then, does the perception of reality look like according to Tye? He distinguishes four basic features of the direct phenomenal experience. They are:

i. **Poised** - directly presented to our understanding. It does not matter whether an individual can link it with a particular concept.

ii. **Abstract** – it is an open question whether we still experience a physical object or not, e.g. a mirage.

iii. **Nonconceptual** – phenomenon can exists when an individual is capable to conceptualize it.

iv. **Intentional**

In my opinion, immune to the critical responses made by proponents of ‘qualia’

3. Lessons to be Learnt

In this Chapter, I have concentrated on proving that the linguistic relativity principle, which demonstrates relativistic approach to the perception of time relations, to
the spectrum of colour terminology, and to what it actually denotes, is defendable against claims made by the universalist, like Chomsky, and presented by Berlin and Kay.

What I found most fascinating, however, is that proper tools for such a defence – particularly against the claims made by Berlin and Kay – do exist in the contemporary philosophical research, i.e. on philosophy of mind and its debate about qualia. Philosophy of mind, in my opinion, provided a solution to a problem that, at first, seemed to belong only to the field of linguistics, but then it has proved to belong to interdisciplinary framework combining philosophy and linguistics.

The question, which should be answered at this point, is what has motivated me to choose Chomsky’s critique and Berlin/Kay account as the most significant charges against the linguistic relativity stance? The motivation was that the two accounts shaped this part of the debate and other arguments against the Whorfian view in the most significant of ways, with the impact being encountered, particularly, in:

1) Steven Pinker’s research programme presented in his 2000 book *The language instinct: how the mind creates language*. The two main claims of Pinker’s stance can be laid out as follows:
   i. Language is meaningless to shaping human cognition
   ii. Human beings do not think using their ‘natural language’. Rather they use a meta – language in this instance, which is called ‘mentalese’.

2) Peter Carruthers’ project of creating a cognitive conception of language without the application of the Whorfian principle (Carruthers 1996); These are the two of his most crucial assumptions:
   i. It is possible to endorse the cognitive conception of language without appealing to the Whorfian relativism.
   ii. ‘The cognitive conception of language can equally well be deployed along with a modularist and nativist view of language and mind. (…).’ (Carruthers 1992, p. 3)

In other words, I find Chomsky’s stance and Berlin/Kay account as the most representative for the proponents of the universalist and internalist accounts of language development and acquisition.\(^\text{29}\)

\(^{29}\) For further readings see:
Now let us move to the next chapter of the thesis, where we will discuss the contemporary arguments - from the field of philosophy of mind, psychology and linguistics - in favour of the Whorf’s concept.

We will examine how those arguments shaped the Whorfian formulation of the linguistic relativity principle into its new form, but what is most important, we will see how the principle influenced the contemporary research on the connections between language, behaviour and, what is more, our cognition.

Chapter III

The questions, which were intriguing me most, having read Benjamin Whorf’s works, were - how many of his arguments and claims have been confirmed or rejected by contemporary studies, researching linkage between languages and cognition, and to what extent the arguments and claims have affected the studies? I will attempt to give answers to these questions on the pages below.

Structure of the Contemporary Research

In my opinion, there are three, distinctive, deeply intertwined categories of the modern study on the linguistic influence on our cognitive abilities, which can support, validate, and explain the Whorfian stance:

i. Linguistic influence on our intelligence,
ii. Linguistically centred view on the nature of consciousness, and
iii. Validation and explanation of Whorf’s claims on the conceptualization of time and spatial relations of the concept of relativity itself.

In addition, two issues, associated with the above, can be identified; they are (1) linguistic augmentation of human cognition and (2) linguistic basis for the formation of the group cognition.

1. Linguistically influenced Intelligence

1.1. Dennett’s research:

In 1994, at the annual series of The Darwinian College Lectures, Daniel Dennett presented his fascinating lecture on *The Role of Language in Intelligence*[^30]. In the lecture, by using interdisciplinary framework combining philosophy, linguistics, anthropology, and the theory of evolution, Dennett cast new light of evidence on the linguistic influence on our cognition. His main goal was to find a relation existing between the two, as he put it, ‘(...) obvious facts’:

1) Human beings are the most intelligent species, and
2) They are the only species with language.

Prior to reconstructing further the stance of Dennett, I have to admit, however, that I have always doubted that claims, as radical as the second one, are right. In fact, writings

of Paul Churchland\textsuperscript{31} confirm my reservations; his claim is similar but less radical than the Dennett’s.

\textit{Where language skills are concerned, we are the most successful species on the planet. In fact, it is the orthodox opinion among psychologists and linguists\textsuperscript{32} that we are the only species with the capacity for language. There is a room to doubt this latter claim, in two important respects.’} (Churchland 1996, p. 257)

These are:

1) Many other species present what appears to be a language, i.e. a systematic means of communication, specific to these species, e.g. larger mammals such as dolphins and whales use their sound-sensing mechanism to communicate.\textsuperscript{33}

2) The ability ‘(...) of our closest evolutionary neighbours, the other great apes, to learn some form of genuinely human language’ (Churchland 1996, p. 258). Since the anatomy of the apes makes impossible for them to command spoken languages, researches used the language of gestures ‘(...) as a target skill for a chimpanzee to learn (...)’ (Ibid.). Surprisingly, results seemed to have been a success.\textsuperscript{34}

Dennett defends his second claim by introducing the following distinction:

1) Language of sort, and
2) Real language.

According to Dennett, animals, like the mentioned above - dolphins, whales, and chimpanzees - use languages of sorts. The real language, however, is the one used by human beings.

The main difference, existing between the two kinds of languages, is the level of sophistication of ‘(...) the expressive, information-encoding properties (...).’ Dennett claims that this level is ‘(...) practically limitless (in at least some dimensions) (...)’ in the real language, whereas it is much lower in the languages of sorts. The species, which use the latter kind, ‘(...) do climb a few steps up the mountain on whose summit we reside, thanks to language.’ (Dennett 1994, p. 1)

\textsuperscript{32} As we have seen through the Dennett’s claim, some of other philosophers may also be included in this group.
\textsuperscript{33} For more details, see: Churchland 1996, p. 257.
\textsuperscript{34} The research of:
1. Psychologists Alan and Trixie Gardener, external source:
http://faculty.uncfsu.edu/tvancantfort/REPRINTS/BTGardner/RMPA96.Part%201.pdf
2. The behaviourist psychologist Herb Terrace
Hence, Dennett’s second claim can be rephrased to read that we are the only species with the real language, demonstrating extremely high level of expressive, information-encoding processes.

The impact, which this kind of language has on the way we think, will be Dennett’s subjects of interest.

The above clarifications completed, we may introduce two questions, raised by Dennett:

1) What kinds of thought require a language?
2) What kinds of thought (if any) are possible without a language?

Dennett’s approach, taken by him to work out a solution to the above closely related issues, is in the quotation below.

*These might be viewed as purely philosophical questions, to be investigated by a systematic logical analysis of the necessary and sufficient conditions for the occurrence of various thoughts in various mind. (...) Any such philosophical analysis must be guided at the outset by reflections about what the "obvious" constraining facts about thought and language are (...).’* (Dennett 1994, p. 1)

In addition, answers to these questions ‘(...) must be supplemented by variety of disciplines ranging from cognitive psychology and neuroscience to evolution theory and paleo–anthropology.’ (Dennett 1994, p. 3)

What I have found particularly fascinating about Dennett’s approach to these questions, is the similarity to the one that Benjamin Whorf might have taken. Whorf was aware that problem of causal relations between languages and thought could not be explained only by the tools of linguistics. Only strong, interdisciplinary approach combing anthropology, linguistics, and philosophical insight, could help to build arguments strong enough to substantiate claims that he had made. I think that the above quotation reveals strong framework resemblance that I can see between the frameworks used by Dennett and Whorf.

Another interesting fact about the framework that Dennett applies is that, in spite of his naturalistic and nativist approach to the mind, he does not rule out the possibility that the set of mind, the tools that we are born with, can be shaped by language and words.

What is more, I think it is crucial to explain how Dennett understands intelligence. Although he does not give his explicit definition in his paper, the phrase ‘varieties of thought’, used in the two above questions, suggests that he treats intelligence, ‘(...) not as a one – dimensional commodity, something that varies only from greater to lesser. Rather,
the intelligence of any human has many dimensions (…) (Churchland 1996,p. 253). I think that this understanding finds its confirmation in Dennett’s further claims and arguments. Then, what do words do for us? (Dennett 1994, p. 2)

Dennett distinguishes three main ways, by which intelligence can be influenced by a language. They are:

1) Influencing memes’ transfer,
2) Through, the more general, two–way sign property of the intelligence, and
3) Linguistic interaction can be an important factor in establishing the presence of episodic memory.

Ad 1

Here, the main claim is that words are ‘(…) the most effective vehicles for memes (…) invading and parasitizing a brain, not simply being acquired by brain.’ (Dennett 1994)

According to Dennett, language is the innovative tool that allowed the hominid line of our first ancestors, who had tamed fire, to ‘(…) split away from the ancestors of modern apes such as chimpanzees.’ (Dennett 1994, p. 3) The language conjoined the brain of our ancestors, hence, ours too, into a single cognitive system enabling the free flow of cultural ideas, involving symbols, rituals, and other practices. Clarify the matters further, Dennett writes:

‘I am not making a foolish claim that all our brains are knit together by language into one gigantic mind (…), but rather that each individual human brain, thanks to the communicative links, is beneficiary of the cognitive labours of the others in a way that gives it unprecedented powers.’ (Dennett 1994, p. 3)

Ad 2

Following the research made by psychologist Richard Gregory, Dennett assumes that anthropologists ‘(…) have long recognized that the advent of tool use accompanied a

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35 Richard Dawkins coined the word ‘meme’ in his 1976 book, The Selfish Gene: ‘We need a name for the new replicator, a noun that conveys the idea of a unit of cultural transmission, or a unit of imitation. ‘Mimeme’ comes from a suitable Greek root, but I want a monosyllable that sounds a bit like ‘gene’. I hope my classicist friends will forgive me if I abbreviate mimeme to meme. If it is any consolation, it could alternatively be thought of as being related to ‘memory’, or to the French word même. It should be pronounced to rhyme with ‘cream’. (Dawkins 1976, p. 192). We will discuss memes in detail in a further part of this Chapter.


major increase in intelligence’ (Dennett 1994, p. 6). The following rules govern the process of establishing the two-way sign of the intelligence:

i. A tool requires the intelligence to be recognize and maintained and,

ii. A tool confers intelligence to those, who, as Dennett puts it, ‘(...) are lucky enough to be given a tool.’ (Dennett 1994, p. 6)

Roger Gregory explains the above phenomena through simple and straightforward an example of scissors. He ‘(...) observes a pair of scissors, as a well designed artifact, not just a result of intelligence, but an endower of intelligence, (...) in a very straightforward and intuitive sense: when you give someone a pair of scissors, you enhance their potential to arrive more safely and swiftly at Smart Moves.’38 (Dennett 1994, p. 6)

Gregory distinguishes various tools; among them, the most pre-eminent, named mind tools, i.e. words. Now, paraphrasing the scissor example, we can say that language is not simply a tool, established by intelligence. The more information or meanings are embedded in the language, the more significant is its influence on the intelligence.

Ad 3

Dennett has drawn the third conclusion through the critique of Merlin Donald’s assumption that non-linguistic39 beings, like the chimpanzees, are ‘(...) able to perceive social events accurately and to remember them’ (Donald 1991, p. 157). Dennett maintains that until now the state of the contemporary research has not provided evidence, which would be sufficient to substantiate the above claim - ‘(...) we have not really been given any evidence from which this strong thesis follows; (...)’ (Dennett 1994, p. 7). He also suggests that the chimpanzees’ transparent perception of social activities and events might be a result of the apes perceptual ability to interact with specialized system of sings, e.g. ‘(...) suppose, for instance, that there is something subtle about the posture of subordinate facing a superior that instantly – visually – tells an observer chimp (...) which is subordinate and how much. (Dennett 1994, p. 7)

Hence, it can be concluded that when no language exists, episodic memory cannot be successfully tested.

38 *Smart Moves* – another way of naming the notion of the Kinetic Intelligence coined by Roger Gregory in his 1981 book, *Mind in Science: A History of Explanations of Psychology and Physics*. By that notion, Gregory means a dynamically transforming form of intelligence, triggered by the use of various tools and, what is most important, by the information they store. (Gregory 1981, p. 311)

39 Non-linguistic beings – in this context, following Dennett’s terminology, beings that use the language of sort.
However, as a broad thinker, Dennett has laid down guidelines for experiments that could lead to the determination of episodic memory capacity used by non–linguistic beings like the chimpanzees. These are the guidelines

1) ‘Experiments that would demonstrate a genuine capacity for episodic memory in chimpanzees would have to involve circumstances in which an episode was observed or experienced, but in which its relevance as a premise for some social inference was not yet determine – so no “inference” could be drawn at once’ (Dennett 1994, p. 7). If such a transparent situation will later on give ‘(…) a retrospective relevance to the earlier episode, and if a chimpanzee can tumble that fact, this would be evidence (…) of episodic memory’ (Dennett 1995, p. 7 - 8). The evidence obtained, however, might well be inconclusive.

2) Letting the chimpanzee to observe a relatively novel behavioural sequence; then, see if the apes (...) can even come close to reproducing the sequence.’ (Dennett 1994, p. 8)

But Dennett is also aware that while experimenting in this way the researcher has to find a solution to the problem of whether the chimpanzees are capable to exploit the storing potential of its brain tissue ‘(…) in such an adaptive way on short notice.’ (Dennett 1994, p. 8)

So far, none of the above experiments has been carried out. Even the tools, provided by contemporary brain sciences, particularly by the microscopic brain study, are unable to resolve the problem presented in the second example. Hence is my believe that Dennett’s third conclusion, i.e. claiming the impossibility of testing for episodic memory in the absence of a language, is still valid.

2. Consciousness – the Role of Language

Now, let us concentrate on the language and consciousness for a while. Here, the fascinating but controversial, Daniel Dennett’s account is the most worth to be analysed.

2.1. General aim and idea

In his 1996 book The Engine of Reason, the Seat of the Soul, Paul Churchland summarized the general idea of Dennett’s account. He writes:

‘Some theorist, most notably Dan Dennett, think that serial cognitive processes – (…) for example, in discursive speech – are constitutive of the very special style of consciousness that only humans and only humans possess. Dennett sees a gulf fixed between human and animal consciousness, and language – like cognitive processing is what is said to make the difference between them.’ (Churchland 1996, p. 260)
Hence, in my opinion, what the Dennett’s account aims for is to:

1. Substantiate the claim that human being is the most successful species in terms of linguistic skills, and
2. Prove that human being’s consciousness differs from the one functioning in non-linguistics animals ‘(...) not just in a degree, but in fundamental kind.’ (Churchland 1996, p. 260)

2.2. Details

Basis for the account can be traced in the two following claims:

I. Our brain’s architecture does not resemble the structure of, what Paul Churchland describes as, ‘(...) a classical, discrete – state, programmed serial computer’, but rather a very complex computing system (‘massively parallel computing system’).

II. ‘Human consciousness is itself a huge complex of memes (...)’ (Dennett 1991, p. 210)

The first claim does not suggest that our brains are not capable of simulating the behaviour of an individual or a simple computing system. For example, our brains can both produce and understand very complex linguistic structures, but particularly, perform deductive operations by using strings of linguistic symbols. (Churchland 1996, p. 264) To make it clearer, think about the daily routine of running various programmes installed in your personal computer (PC). The fact is that each of the programs turns your PC into, as Dennett has put it, a “virtual machine”. Now, I am operating word processing software so the software has turned my computer into a “word–processing machine”. If I used imagery-editing software, it would turn my PC into an “imagery processing machine”.

By the same token, our complex neural system - ‘(...) a cobbled together collection of specialist brain circuits (...)’ (Dennett 1991: 228) - emulates computational processes of serial machines. According to Dennett, this is what the brain does when it learns a language, unfolding the purpose of the language acquisition and the essence of consciousness.

As Paul Churchland has written that our brains ‘(...) acquire the capacity, absent in nonhuman animals, to represent the process information in a structure sequence of rule – governed representations unfolding in time. It is this unfolding sequence of representations, this broadly linguistic stream of activity that constitutes, according to Dennett, the steam of human consciousness.’ (Churchland 1996, p. 265)
Through Dennett’s second claim, we can indicate that these unfolding, linguistically influenced sequences of representation are nothing other but memes. Let us return to the classic understanding of memes as meant by Richard Dawkins and adopted by Dennett and attempt to answer the question, what does it tell about the nature of consciousness?

According to Dawkins, we should understand the meme as (1) ‘(…) unit of cultural transmission (…)’ or (2) ‘(…) unit of imitation (…)’ (Dawkins 1976, p.192). But what do they really transmit or imitate? The answer is the ideas that ‘(…) form themselves into distinct memorable units (…)’ (Dennett 1991, p. 201), i.e. the ideas important for the survival of species and undergoing incessant development of its culture and therefore, are replicated, transmitted, and imitated through the process of natural selection.

‘Examples of memes are tunes, ideas, catch – phrases, clothes, fashions, ways of making pots or of building arches. Just as genes propagate themselves in the gene pool by leaping from brain to brain via a process which, in the broad sense can be called, imitation.’ (Dawkins 1976, p. 192)

Following the Dawkins’ line of thinking, Dennett states, ‘Meme evolution is not just analogous to biological or genetic evolution, not just a process that can be described in these evolutionary idioms, but a phenomenon that obeys the laws of natural selection exactly.’ (Dennett 1991, p. 202). In addition, we have already learned that according to Dennett, language is memes’ most efficient vehicle, which enables the transmission of an idea to take its most efficient form.40

With the above facts in place, it is worth focusing on the picture of consciousness that unfolds itself in front of us. Paraphrasing Dennett’s second claim, it could be said that consciousness itself is a huge conglomerate of units – organized ideas - crucial for the survival and development of species, which are transferred through language, ‘(…) brain to brain, as Dawkins would say. In my opinion, there are two important lessons to be learnt from the above definition.

1) Our consciousness was established through the evolutionary process of the constant transfer of ideas, empowered by the language.

2) Constant and free flow of thoughts and ideas through the language is not only crucial for the creation of consciousness, but also for our survival.

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40 For more details see: Ad 1, item. 1.1.1, Dennett’s Research and subpar. 1.1. Intelligence, p. 4–5, next Chapter.
In other words, to develop our consciousness and to survive, we need to have a language, need to communicate constantly, and need to transfer crucial thoughts and ideas. Hence, consciousness is not something innate, but acquired through constant interaction with other people, interaction based on linguistic communication, free flow of thought and idea. It is the idea of consciousness that undergoes extensive and dynamic modifications. As Nietzsche once said, ‘Consciousness generally has only been developed under the pressure of the necessity for communication.’ (Nietzsche 1882)

2.3. How the Works of Dennett complement Whorf’s Research

I believe that complexity and accuracy are the most important indicators of Whorf’s observations and thus, the research he made. Through careful arguments, reconstructed in Chapter I, we have learned the way the linguistic categories influence our concept of time, space matter and why we behave this or another way. It can be said that when it comes to the explanation of mechanisms of direct linguistic influence, or to the question about the influence of language, Benjamin Whorf was one of the best thinkers.

However, there had been two significant questions, which were intriguing me until I studied Dennett’s research on the linguistic influence on intelligence and consciousness. The questions had been - why does language influence our concepts of time, space and why are these two concepts so crucial in both the SAE and Hopi?

Their importance for both the linguistic groups is not a coincidence. Hence, based on what has been said about the nature of consciousness, I believe that the concepts of space and time are in fact memes, units of ideas and thoughts crucial for the cultural development. Therefore, linguistic communication constantly replicates them.

Whorf has accurately explained the mechanisms of linguistic vehicles and the way the linguistic transfer of ideas, existing between the linguistic groups, functions. However, I think that the researches, contemporary with Whorf’s times, did not enable him to research this phenomenon in detail.

Why am I of the opinion that above answer is plausible? The conclusion of Edward Sapir’s research – one of Whorf’s main inspirations – is very similar to Dennett’s final assumptions on the languages role in consciousness, the necessity of constant linguistic communication, memes, etc. Sapir writes, ‘We see and hear and otherwise experience very largely as we do because the language habits of our community predispose certain choices of interpretation.’ (Sapir 1939). Language habits of the group, transferring concepts of great cultural value, play an essential role in forming consciousness. That is why I believe
that Dennett’s work can help us to understand better regularities observed by both Sapir and Whorf.

3. The MIT research

Research led by Dr Lera Boroditsky and her colleagues from the Massachusetts Institute of Technology provides us with ‘(...) several lines of evidence regarding the effects of language on people’s representations of space, time, substances, and objects.’ (Boroditsky 2001, p. 1) and thus, gives contemporary arguments in favour of Benjamin Whorf’s most significant claims regarding the concepts of space and time.

This will be the final and conclusive sub-section of my thesis.

3.1. Space

One of the most characteristic features of the MIT research is that it tests Whorf’s principle on the grounds of particular languages. It does not research larger linguistic groups. It starting point is the analysis of how the language influences the concept of space. Here, the base assumption states that, ‘Languages differ considerably in how they describe spatial relations’ (Boroditsky 2001). Languages, which are the subject of interest, are English, Dutch, Finnish, Korean, and Spanish (Bowerman, 1996).

First step is the analysis of the cross, the linguistic differences between the English and Korean:

‘(...) English distinguishes between putting things into containers and putting things onto surfaces. (...) Koran distinguishes between tight and close fit or attachment. For example, putting a latter in a bowl requires a different relational term (...) than putting a letter in an envelope (...), the first example is an example of loose containment and the second an example of tight fit. (Boroditsky 2001)

In order to see whether the above differences influence the way English and Korean speakers perceive spatial relation McDonough et al. (2000) has proposed a series of tests during which they were presented scenes ‘(...) involving tight or loose fit (...). After they had seen a few examples of either tight fit or loose fit the subjects were shown an example of tight fit on one screen, and example of loose fit on another’ (Boroditsky 2001). It took longer time for the Korean speakers to look at the relations they had just been acquainted with while the English speakers did not recognize and distinguish between the tight and loose fit relations. What is more, McDonough’s further research indicates that the prelinguistic infants, who took the above test (‘being raised in both English – speaking and Korean – speaking house – holds’), distinguish between the loose and tight fit relations. There are two important lessons to be learnt from McDonough’s findings.
1) Infants ‘(…) may come ready (…)’ to recognize various numbers of spatial relations, distinctions etc,

2) However, during the process of language acquisition and further use ‘(…) the spatial distinctions reinforced (…)’ by infants’ particular language are those, which remain dominant in their, as Dr Boroditsky puts it, ‘(…) representational repertoire.’ (Boroditsky 2001)

3.2. Time

This part of the research is based on the assumption that whereas in all known languages spatial terms denote time (e.g. ahead of schedule, looking forward to the future etc.), each uses different terms in different ways. The assumption is analysed based on the comparison of English and Mandarin languages.

‘In English, we predominantly use front/back terms to talk about time. (…) We can move meetings forward, push deadlines back, and eat dessert before we’re finished with our vegetable’ (Boroditsky 2001). In other words, terms used to denote asymmetric, horizontal, spatial relations are similar to the terms used to arrange events in a sequence or to establish time relations.

‘In Mandarin, front/back spatial metaphors for time are also common (…). (…) the speakers use the spatial morphemes “quian” (front) and “hou” (back) to talk about time’ (Boroditsky 2001). What makes Mandarin language particularly interesting, is that, in addition to the horizontal spatial terms, we can find also the vertical metaphors to talk about time.

‘So, do the English and Mandarin ways of talking about time lead to differences in how people think about time? Specifically, are the Mandarin speakers more likely to construct vertical time – lines to think about time, while the English speakers are more likely to construct horizontal timelines? (Boroditsky 2001). Let us find out. There are two essential series of experiments here:

1) In the series of experiments, conducted by Dr Boroditsky, it has proved that the Mandarin speakers think of time vertically, even when they formulate on utterance based in English and what is more, strongly basing their utterances on the perception of spatial relations.’(…) Mandarin speakers were faster to confirm that March comes earlier that April if they had just seen a vertical array of objects than if they had just a horizontal array. The reverse was true of English.’ (Boroditsky 2001)
2) During the second study, the English native speakers were taught to use vertical spatial terms to talk about time (in a way similar to the Mandarin’s). Further, into the experiment, the English speakers ‘(...) showed the same bias to think about time vertically as was observed with Mandarin speakers’ (Boroditsky 2001). According to Dr Boroditsky, the outcome of this study suggests two conclusions, which in my opinion substantiate the weak version of linguistic determinism endorsed by Whorf.

i. Language is indeed a powerful tool of shaping the structure of our thought, and

ii. The native language of the speaker plays an essential role in shaping his habitual thought (Boroditsky 2001).

In this case, the linguistic determinism is weak because ‘(...) one can always learn a new way of talking and with it, a new way of thinking.’ (Boroditsky 2001)
Final remarks and Conclusion

Having studied the works of Benjamin Lee Whorf, I have realised how underestimated and forgotten the thinker really is. Hence, the main goal of this thesis was to demonstrate that the concept conceived by Whorf and his insight observations have modified the way the relations between behaviour, thought and language are perceived. I believe that due to contemporary researches, finally, he will be adequately recognized.

I believe that in my thesis I have adequately shown:
1) The inadequacies in the former critiques of the linguistics relativity principle
2) How the contemporary research on the connections between the language and thought substantiates:
   a. Weak version of the linguistic determinism endorsed by Whorf,
   b. Two pillars of the Whorfian argumentation, i.e. the arguments showing how language influences the concept of space and time we develop.

In addition, as we have seen, the research undermines the foundation of the strong version of linguistic relativity. Thus, I believe that Whorf was right in not endorsing it in the first place. He was not a naïve thinker.

3) How Daniel Dennett’s linguistically centred view on consciousness can help us in better understanding of the purpose of the linguistic influence on space and time.
4) How philosophy and linguistics complement each other.

However, I believe that no words can complete this thesis better than Dr Lera Boroditsky’s below.

‘Considering the many ways in which languages differ, the findings reviewed here suggest that the private mental lives of people who speak different languages may differ much more than previously thought. (…) it appears that what we normally call ‘thinking’ is in fact a complex set of collaboration between linguistic and non-linguistic representation and processes.’ (Boroditsky 2001)

The research on the matter still goes on, once again showing the human strive for knowledge and undeniable power of our imagination.
- Bibliography -


McDonough, L. Choi S and Mandler J. *Development of language – specific categorization of spatial relations from prelinguistic to linguistic stage: a preliminary study*, presented at the Finding the Words Conference at Stanford University, 2000


Watson, G., *St. Augustine’s Theory of Language*, *The Maynooth Review / Revieú Mhá Nuad*, Vol. 6, No. 2 (May, 1982), pp. 4-20, Published by: Faculty of Arts, Celtic Studies & Philosophy NUIM