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# On the Cognition of the Expression of Thought in Language

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## 論文の要旨

This dissertation describes a theory of the cognition of deriving a linguistic expression from a language-independent thought. Fundamentally, linguistic expressions are arrangements of words, morphemes, and constructions that yield particular meanings; the task of expressing thought in language can be described as coming up with an arrangement that will yield an appropriate meaning. Our approach to investigating this will therefore involve exploring meaning construction in language, explicating what is involved in constructing arrangements of linguistic elements, and identifying the cognition used to find a suitable arrangement. I show that this cognition is a kind of abduction (the production of a cause for a desired target effect).

In Chapter 2, I explore a number of background issues. The starting point for our inquiry is the issue of whether thinking is done in some language or is originally language-independent. In essence, while language can influence thought (e.g. by providing patterns that can serve as templates for thought and by being a vehicle for concept acquisition), thought itself is in general independent of language. This gives rise to the problem that is the subject of this dissertation: since thought is originally not formulated in language, linguistic expressions must be derived

somehow from the original thought.

The next topic to be addressed is the nature of linguistic representations—what do expressions mean? Several issues are examined. First is the question of whether grammatical elements and lexical elements are fundamentally different and should be treated in isolation. I discuss this in the context of our problem, and argue that they should be treated in an integrated manner. The second is the question of what counts as a linguistic element. Elements include words, morphemes and constructions, but there are complicating factors that make this not quite so straightforward a definition. Essentially, what counts as an element and what meaning it has depends on the language user's analysis. Next is the granularity of the conceptual structure expressed in language and how this compares to that of thought. On one hand, linguistic forms are often underdetermining with respect to their referents, but they can also be more specific than the thoughts they express. Finally, I address the issue of what the content of linguistic meaning is; I discuss four important aspects: propositions, imagery, metaphor, and structural relationships. Following this, we consider the problem of the format of the mental representation of concepts. This is a complex and unresolved matter. A major debate is whether concepts are mentally represented with perceptual information or not. There has been a great deal of investigation

concerning this in cognitive neuroscience and cognitive psychology. I discuss various problems regarding the hypothesis of a perceptual format of conceptual representation, and conclude that while it is possible that perceptual information may have some role in the mental representation of concepts, it probably cannot be primarily constitutive. The last component I address here is lexicalization (the encoding of ideas in the lexicon). The cognitive ability underlying lexicalization is what I call *conceptual lexicalization*—the ability to take any bit of thought and index it as a concept (without necessarily assigning it to a linguistic element). This has important implications for how language-independent thought can be organized and related to linguistic structure.

I then address the issue of the architecture of language; this is necessary for setting up how our problem should be approached. I review various conceptions of the architecture of language, discussing questions of how linguistic form relates to meaning, and clarify the architecture that will be adopted for this dissertation. All of this takes us to the final piece of the background: what the basic schema of the process of expressing thought in language is. I discuss ideas from previous research that are related to this issue. I then outline the process as I see it: The language user starts with a language-independent thought and must make an arrangement of linguistic elements that generate an approximation of that thought. A ‘prerequisite’ to making an arrangement of elements is organizing the information to be expressed in accordance with the mechanisms of meaning construction; this organization allows selecting the linguistic elements that are to comprise the arrangement and structuring those elements. The components to this process will be explored in detail in later chapters; establishing what the process is allows us to finally directly address the question of what cognition is

used to carry it out.

In Chapter 3, I take up the issue of meaning construction. The essential problem we must address is the (obvious) fact that particular arrangements of linguistic elements generate particular meanings. This is not a straightforward matter. Composition of meaning does not generally result in a meaning comprised of a list of the meanings of the components, and meaning is sensitive to linguistic context: that is to say that meaning construction is dynamic. I discuss the issue of compositionality, and then address the problem of the cognitive mechanism of meaning construction. I review theories on the cognition that forms the mechanism for meaning construction, whose proposals include inference and simulation. I conclude with a proposal that the cognition driving the collective dynamic rules of meaning construction is based on the understanding of how linguistic meanings function and interact; this cognition is related to that used for making sense of mental models, and can be connected as well to both inference and simulation.

In Chapter 4, I explore the details of constructing an arrangement of linguistic elements. In a most basic sense, this consists of organizing the information to be expressed and selecting the linguistic elements that are to constitute the arrangement. The organizational structurings of semantic material contained by linguistic expressions reflect the mental organization of conceptual information as expressed in language, of which there is a wide variety within languages and especially across languages. I review research that addresses aspects of this issue of mental organization, and then introduce *compartmentalization*, a general theory of the mental organization of information in language in accordance with meaning construction. The selection of linguistic elements is a complex issue.

I first summarize the consensus understanding of lexical access, including theories of associative access (spreading of activation), and discuss priming effects. I then discuss categorization, the consensus account of lexical selection in cognitive linguistics. Finally, I argue that the selection of linguistic elements for expressing thought should be understood through compartmentalization, rather than categorization alone.

Chapter 5 is the core of the dissertation, discussing the central claim that the expression of thought in language is accomplished through the cognitive operation of abduction. I first give a basic introduction to what abduction is and what an abductive problem is. I then clarify abduction as a matter of logic versus abduction as a matter of cognition (we are interested in the latter): abduction as a cognitive operation is the production of a cause that would yield some desired effect, through a search for cognitive objects and combinations of them. Following this, I show that expressing thought in language is abduction and clarify what sort of abduction we are interested in. The kind of abduction responsible for the expression of thought is one in which the cause and the effect are approximately equal, there is no predetermined list from which the solution is taken, and there are no pre-established rules specifying what a potential solution would yield. Next, I explore the mechanics of this abductive cognition, addressing five main aspects. Abduction is closely connected to the psychological phenomenon of insight, though not wholly identical with it. Within this discussion, I clarify the relationship between abduction and insight and refer to research on insight to give a further-enriched understanding of some of these aspects of the mechanics of the cognition. First, I propose that the particular kind of abduction used in expressing thought involves creative manipulation of mental models. Next, I

point out that abductive problems can be solved in one step or in multiple steps. Thirdly, I discuss the mechanism for searching for elements with which to build the solution/linguistic expression. Fourthly, I suggest a few cognitive mechanisms that may account for automatizing the process of expressing thought in language. Lastly, I consider the potential advantage that unconscious processing may have for avoiding working memory capacity limits, which may otherwise be a hindrance. In the final section of the chapter, I describe a model of the process of expressing thought in language.

In the concluding chapter, I summarize the investigation. I then speculate on some important issues that are beyond the direct scope of the dissertation, but nevertheless are related to ideas brought up in the dissertation: the importance of conceptual lexicalization in thought in general, and the much-debated question of what comprises the language faculty. I conclude by noting directions for future research.