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The Role of Gestalt in Language Processing

This article discusses gestalt phenomena in language processing, compiling data from three empirical studies that analyze language acquisition, the terminology of chemistry, and proper names in science fiction and fantasy literature. In addition to the analytical level of language processing, the article argues that a holistic level in language processing must be taken into account, since the acoustic image of a word works as an overall impression, as a gestalt, and therefore creates a new unit that is more than just a sequence of sounds.

In an early phase of language acquisition, the ability to process information is not yet fully developed in a child. In trying to produce longer words, there will be

several deviations from the target word. However, the stress patterns and number of syllables are most likely to be reproduced correctly. In order to achieve this, children develop different strategies. In some cases, they fill the rough structure of the word with sounds that are different from, but similar to those of the target word. But they also create substituting units. Syllables that are not stressed apparently form sub-units in language processing. These are substituted by identical syllables in order to sustain the stress pattern and number of syllables in the word, while using only a limited processing capacity. The overall acoustic impression is dominant and remains preserved.

In processing the inflection of verbs, a child apparently analyzes and universalizes whole words, i. e. *gestalts*, and draws on them as a model for new verb forms. Computer simulations show that a processing system is able to abstract regular structures from input that consists entirely of complete words, not of rules or single morphemes. The processing system is able to autonomously find and use the corresponding language rules for verb inflection. This study gives insight into the workings of an information processing system. In comparison with the data from childhood language acquisition, it can be concluded that for computers as well as children the word as a complete unit serves as a starting point for the acquisition of complex linguistic structures. Basic presupposition is a single learning mechanism that enables the acquisition of regular and irregular forms associatively as patterns. The basis for this processing are words as a whole, as *gestalts*.

Sample words from chemistry terminology show shared sound features: they consist of at least three syllables, the last syllable is stressed, they have almost exclusively full vowels, the last syllable is closed and there are simple syllable boundaries. This phonological *gestalt* emerges through different procedures of word formation such as neologism, contamination, derivation or abbreviation. Most important is the acoustic impression, which is the same in all of the examples, since they sound like foreign words in Latin or Greek that have an air of professionalism and earnestness. To achieve this effect the interplay of sounds is relevant, not the single phoneme or morpheme.

A similar phenomenon can be found in an analysis of name groups in fantasy and science fiction literature. Characters in these genres usually bear artificial names, created by the author in order to be ›suitable‹ for the character. The names of characters that share similar features (e.g. small characters, young women, evil monsters, powerful wizards) also show common sound characteristics. In this the authors aim at a sound symbolic effect of their words. Remarkably, different authors seem to follow similar sound patterns in choosing their names. In order to analyze the recipients' view and therefore the effectiveness of those names, participants in the study were confronted with different artificial names. They were asked to judge whether certain names were more or less appropriate for certain types of referents. The combinations chosen by the authors actually received the best marks, although the participants were not supplied with any addi-

tional information about the texts. Therefore it is the sound patterns that convey information in these artificial names. They correspond to certain features such as gender, strangeness, height, harmlessness, power or wickedness. This connection exists for the creators of the names as well as for the recipients.

A survey among the participants about the reasons for their judgments showed that it was not bound to single sounds. Phonemes, the position of sounds, word length and syllable structure work together and construct an overall impression, according to which artificial names and referents are allotted. Single sounds do not form a sequential sound chain, but produce a whole that is qualitatively new.

An important result of this study is the fact that authors and recipients for the most part agreed on the effects of the names. The relation between phonetic features of the names and groups of referents is not arbitrary, since the phonetic structure of a name shows a repeated systematic relation to the physical and psychological features of its bearer. As a consequence, this study leads to the assumption of sound symbolic effects that in addition to gestalt effects support the functionality of wholeness.

All three areas of research show that not only phonemes, but the entire sound gestalt of a word forms a level in language processing. This point of view as a new insight into language processing aids in our understanding of acquisition processes. It requires a new way of thinking in the formulation of further theories as well.

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[1] <<http://graphicdesign.spokanefalls.edu/tutorials/process/gestaltprinciples/gestaltprinc.htm>> (28.02.2008).

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