INTRODUCTION

This presentation aims at defending the idea according to which a neurolinguistic and an acoustic analysis of onomatopoeias can help us determine their semiotic status. Indeed, onomatopoeias are motivated linguistic signs, but the nature of their motivated link remains vague.

MATERIALS AND METHODS

This research is theoretical and has been widely inspired by the specialized literature in neurology.

1. ONOMATOPOEIAS ARE BRIDGES

Neurological Experiment:

Onomatopoeic stimuli appear to activate both brain regions involved in the recognition of animal cries and regions involved in the recognition of verbal speech. It appears that the left middle anterior STS (Superior Temporal Sulcus) is involved in the recognition of phonemes while animal cries activate the bilateral – middle and anterior – STS and the left IFG (and Inferior Frontal Gyrus). Onomatopoeias appear to activate the left anterior STG – involved in the recognition of phonemes -, the bilateral – middle and anterior – STS and the bilateral IFG – involved in the recognition of animal cries (Hashimoto et al., 2006).

Acoustic Phonetics experiment:

Assanee et al. found evidence that [onomatopoeic] sounds are transformed into the speech elements that minimize their spectral difference within the constraints of the vocal system (Assanee et al., 2011). Her experience revealed that our vocal apparatus is capable of producing sounds that share some common features with environmental sounds. She worked on the onomatopoeias “click” and “knock”. Released from anatomical restrictions, synthesized phonemes are likely to determine the common acoustical features between the phonemes and the natural sounds. Thus, from an acoustic point of view, the strings of phonemes [sk] and [lk] are similar to the noises they refer to (a blow on a door (for “knock”) and a real click sound). From this experiment, one can conclude that onomatopoeias share both features of verbal speech and features of environmental sounds.

2. PARADIGMATIC ICONICITY

The iconicity of onomatopoeias is not direct and monadic but diagrammatic and paradigmatic.

Rhodes’ work (1994) reveals the existence of contrasting pairs of “aural images”, i.e. sound-symbolic sub-morphemes. For instance, there is a paradigmatic relation between sound oppositions like [i] versus [o] into onomatopoeic words. Syllables are made of contrasting types of “onsets”, “shoulders” and “decays”. For instance, /n/ in the word “Boing” is a paradigmatically iconic phoneme, since the corresponding sound also has an “extended decay”, thus, from all the phonemes in English, /n/ is the closest to the concept of “extension”, relatively to the other possible phonemes. Yet, this phoneme is not absolutely extended but only relatively to other phonemes. The following images represent the different types of diagrams.

3. TWO KINDS OF ONOMATOPOEIAS

We propose to classify onomatopoeias into two distinct kinds: imitative ones and echoic ones, thanks to arguments belonging to different fields of linguistics (semantics, semiotics, phonology) and also disciplines outside the field of linguistics (acoustics and neurology). Here, we will only highlight the neurological and semiotic arguments.

A semiotic Distinction

Imitative onomatopoeias are words that imitate sounds produced by a vocal apparatus; echoic onomatopoeias imitate sounds produced by everything else than a vocal apparatus. Imitative onomatopoeias focus on the production of the sound (there is a “real imitation” and the speaker takes the place of the animal which he imitates) while echoic onomatopoeias only focus on the sound itself (Assanee, 2011).

A neurological distinction

Lewis et al. (2005) found evidence that animal sounds stimuli activate the left and right hemisphere along middle portions of the superior temporal gyrus STG (mSTG) whereas tool sounds stimuli activate the middle portion of the left inferior frontal sulcus (mIFS).

CONCLUSIONS

1. There are two kinds of onomatopoeias that clearly differ from one another from several standpoints and especially from a semiotic standpoint;
2. The iconicity of onomatopoeias is not monadic but diagrammatic and paradigmatic;
3. This diagrammatic iconicity is imagic since onomatopoeias contain acoustic features belonging to their referents and acoustic features belonging to symbols.
4. It would also be interesting to compare onomatopoeias with interjections, since interjections indicate the mental states of the speaker (they are indexes), whereas onomatopoeias are icons; yet, in every dictionary onomatopoeias are labeled as interjections.

Bibliography

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Acknowledgments

I would like to thank Dr. Vincent Renier for his guidance, advice and corrections all along my research project. I would also like to thank Benjamin Verrier for having accepted to help me for the design of my posters.