

**THESIS OF DISSERTATION FOR CANDIDATE DEGREE  
THE INTERACTIONS OF EVOKED POTENTIAL IN THE POLYSENSORY  
CORTEX OF CAT AND RAT**

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The author elaborated a method which is suitable for examination of interactions between cortical evoked potentials in polysensory areas of the cerebral cortex.

It has been shown that the main type of interaction between somatosensory and acoustic potentials is occlusion, although sometimes also facilitation occurred. The direction and depth of interactions proved to be variable from point to point and characteristic for the locus examined. The interactions due to each site could be shifted towards occlusion by a.) elevating the stimulus frequency, b.) stimulating the mesencephalic reticular formation, c.) administering propranolol (a beta adrenergic blocker), gamma amino-butyric acid, Baclofen or diazepam. The occlusion manifested itself in all these cases by decrease of the summated response. Sometimes this attained such a degree that the summated response was smaller than each of the constituents.

A shift towards facilitation was observed when amphetamin or bicucullin was administered. This was usually due to enhancement of the summated response.

It was concluded that in case of occlusive interaction the inhibitory interneuronal system, in case of facilitatory interactions the excitatory interneuronal system became activated.

Extracellular microelectrode recording revealed the existence of five types of neurons which possibly participate in the interactions described above. Factors interfering with interactions of evoked potentials influenced unit activity in a characteristic manner. The polymodal units proved to be plastic in their behaviour: the same influences which were effective on evoked potentials, modified their firing activity, too.

On the basis of experimental observations a functional model of polysensory cortices could be constructed with special emphasis on the interneuronal system of cortex, as target structure of the specific and non-specific afferent fibers.