nuclei consistently elicited spindling waves on the cerebral cortex (Fig. 1*C*). The barbiturate by itself, that is, without any interruption of the postulated thalamoreticular connections, never induced this effect.

In our opinion, these latest results indicate that the unspecific thalamic system is mainly or solely concerned with the production of slow cortical activity. They also suggest that the thalamocortical mechanism of synchronization is not frequency-dependent with regard to the modalities of its activation. And finally, they give direct and further evidence that the recruiting and arousing systems of the brain are separated functional units, a fact which has already been postulated on other grounds (*5; 6*).

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Psychomotor Coordination of Auditory and Visual Space at Birth

Abstract. Before it was 10 minutes old, a human neonate was able to turn its eyes in the direction of an auditory stimulus. This demonstrates that learning is not essential for a crude form of auditory localization, directional oculomotor response, and coordination of auditory and visual functioning.

It has long been believed that space perception is dependent upon extensive learning experiences (*1*) although the results of some studies (*2*) do not appear consistent with such a belief. If it could be demonstrated that responses based upon space perception are present at birth, the nativist view of space perception would be greatly strengthened and serious doubt would be cast upon the empiricist view.

In 1952 I noticed that my child (born without anesthesia, by natural childbirth), about one-half hour after birth, turned her eyes in the direction of a soft click made near one ear or the other. This report describes a systematic attempt to replicate this observation.

The subject was born without pharmacologic anesthesia, by natural childbirth. Three minutes after birth, a series of trials were begun. On each trial a click was made (in predetermined order) with a toy "cricket" next to the right or left ear of the subject, who was lying on her back. Two observers independently recorded whether the eyes (whose movements were fully coordinated) moved to the infant's left, to the infant's right, or not at all, in response to each click.

As soon as the first click was made, the neonate, who had been crying with eyes closed, stopped crying, opened her eyes, and turned them in the direction of the click; it was clear to both observers that the movements occurred in response to the click. At about eight trials per minute, 52 successive trials were undertaken; the series was discontinued because the subject "lost interest," adapted, or satiated, in the sense that no further eye movements occurred in response to the clicks. When the experiment was over, the subject was only 10 minutes old.

The observers agreed substantially. On only one trial did they disagree on the direction of eye movement; on six trials, one observer recorded an eye movement while the other recorded none. There was perfect agreement on the remaining 45 trials; in 23 of these there was no eye movement. For 22 critical trials in which the observers both reported eye movement in the same direction, 18 were in the direction of the click and four in a direction opposite to the click. The difference between this distribution and chance (11 and 11) is significant at better than the .01 level by binomial expansion or by *t*-test based on the standard error of a proportion.

Although psychological experiments are usually performed on a fairly large number of subjects, the original informal observation, and the statistical results (as well as the unquestionable response in the first trial) in the present more systematic replication, appear sufficient to make the point. Within 10 minutes after birth, rudimentary directional auditory localization is possible; so is directional oculomotor (perhaps visual?) response. Moreover, at least on a reflex level, a rough coordination between auditory space and visual (motor) space can be observed. This finding is not compatible with the view that space perception, and particularly cross-modal spatial coordination, is based upon a long and arduous learning process (*3*).

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Stimulus Generalization of Imprinting

Abstract. Chicks were imprinted with a bluish object, then tested with different spectral values ranging to yellow-green. A systematic decrement in following was related to the stimulus series, although there was considerable generalization to all test values, which increased during testing. These data lead us to question the "irreversibility" of imprinting.

Lorenz (*1*) was the first to describe imprinting. He wrote of it as an "object-acquiring" process manifested by the behavior of an organism following the "acquired" object. The acquisition of this response occurs early in the life of the organism (typically, domesticated fowl) during a critical period, at which time the animal will follow the first moving object to which it is exposed. For Lorenz, the imprinting process is "irreversible" in that (i) the first object to elicit the following response becomes the only one capable of doing so, and (ii) this acquired behavior is never forgotten.

The first aspect of this "irreversibility" deals with response specificity, implying minimal generalization of the following response to stimuli other than the "acquired object." Moltz (*2*) points out that there is a lack of adequate re-