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Ernst Pöppel is Chairman of the Human Science Center and former Director of the Institute of Medical Psychology, Ludwig-Maximilians-University Munich (Germany). He has been Board Member of the National Research Center Jülich in Germany being responsible for the Life Sciences and Environmental Research. He is Guest Professor of Peking University, being also associated with the Institute of Psychology of the Chinese Academy of Sciences. He is a member of the National Academy of Sciences Leopoldina (ML), the Russian Academy of Education (Moscow), the European Academy of Sciences and Arts (Salzburg), and the Academia Europaea (London).

Previously he has worked at the Department of Brain Science and Psychology of MIT, Cambridge / USA, and at the Max-Planck-Institutes of Behavioral Physiology and Psychiatry, Germany. His academic education (doctoral degree and habilitations) he obtained in the universities of Freiburg, Munich and Innsbruck (Austria). His research in brain science and psychology is characterized by an interdisciplinary approach focusing on temporal and visual processing. Besides scientific articles he has written some ten books for the general public. A particular challenge he sees in the connection between basic research and applications, making scientific results accessible for better education, technological developments, new diagnostics and therapies in medicine, or the appreciation of the arts. Perhaps because of personal experiences from the second world war (being born in 1940) he promotes intercultural understanding; the task is to better understand anthropological universals and cultural specifics. His political motto is: "Scientists are Natural Ambassadors".

**Trust as basis for the concept of causality: A biological speculation**

How do we come to the concept of causality? Behavior in humans and other organisms is controlled by anticipations. Reactions are rare events. The anticipatory time windows for motor actions are rather short, seconds only in higher mammals. Anticipation implies the successful completion of the action. To monitor potential success, sensory feedback is necessary. If feedback matches the anticipatory command, the action cycle is closed.

This is basically the idea of the “reafference principle”; only the concept of an anticipatory time window is added as a necessary component. The neural machinery responsible for the action-sensation cycle can only operate, if behavioral success is guaranteed. This means that there must be trust in success; otherwise the action-sensation cycle could not have developed during evolution. Organisms implicitly know and “trust” that there is a future (a reality) within which an action will come to an end. This future-oriented cycle of anticipation, action, and sensory feedback which leads to behavioral satisfaction implies a causal link. Thus, causality represents trust in the future, and is a built-in feature of any organism operating on a pre-verbal level, (in principle also in uni-cellular organisms). This biological mechanism has an important consequence for understanding human reasoning. In reflecting behavior it can be concluded that the concept of causality represents on an explicit level what characterizes a basic biological process on an implicit level. The fundamental philosophical sentence “nihil est sine ratione” (nothing is without a reason) has, thus, a biological foundation. This sentence, however, does not imply that whatever happens has only one reason; humans have the tendency to attribute only one cause when trying to understand whatever has happened or whatever is given. This tendency reflects some severe limitations of the human brain resulting in the disease of “monocausality”.