healthy persons (Broca: 478,1 ms; controls: 280,2 ms). 2. Lexical decision: even Broca aphasics show a faster decision for PN (Broca: 977,6 ms; Controls: 876,2 ms) than for CN (Broca: 1079,4 ms; Controls: 919,2 ms). In comparison to speech healthy persons, Broca aphasics show a selective lower impairment for PN than for CN, particularly in relation to the significantly low reaction time for simple sounds. One possible explanation is the optionally right hemispheric support while recognizing PN. A slower response time for CN within the group of left hemispheric damaged aphasics in comparison to the speech healthy control group could suggest that the intact right hemisphere does not support the left hemisphere in recognizing CN at all, or at least much less than it supports the left hemisphere in recognizing the class of PN. In addition, while PN have no conceptual meaning, semantic processes during conceptual meaning constitution of CN could explain why PN could be faster classified and comprehended.

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PsiCasso: Simulating the Dynamics of Aesthetic Appreciation

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Aesthetic appreciation is not stable. As everyone knows from personal experience, how much we like something—say, a work of art, a piece of music, a movie—depends on our current mood. On a much larger scale, what is considered good design (shown by Carbon, 2010, for cars) is Zeitgeist-dependent and subject to oscillate over the years and decades.

To establish a psychological foundation for this so-called "cycle of preference", we propose the PsiCasso model. It combines the cognitive-emotional-motivational PSI-theory by Dörner (1999) with the MINERVA2 memory model by Hintzman (1988). Employing an unsupervised artificial neural network (ANN), the agent has "eyes" to perceive visual stimuli. The ANN translates the stimuli's features (like color, contrast etc.) into arbitrary (but reproducable) numerical vectors.

This agent, proposed in Raab et al. (2011), was now implemented in JAVA and is able to use frequency and similiarity judgements (utilizing the MINERVA2 model) to decide if any given stimulus is considered as novel, familiar, or somewhere in between. Novel stimuli (i.e., pictures that don't match with existing memory content) are considered a source of uncertainty and thus thought to repel the agent. After some more novel pictures of the same type, the agent should get familiar with them. These pictures now become a source of certainty and are considered pleasant—until, again after some more pictures of the same type, the familiarity is so strong that these pictures are considered as boring.

In test runs with different image sets, we measured arousal and needs of the agent. When preference is considered as a function of novelty and emotional state (which follows from Dörner's theory), the agent shows the predicted "cycle of preference". The model grasps phenomena like the mere-exposure-effect (Zajonc, 1968) and theories about processing fluency (e.g., Reber et al., 2004)—and at the same time relates perception to the agent's inner state, allowing for long-term changes in "taste".

In future research, we will extend the architecture to incorporate what Fechner (1876) called "associative factors": That is, image content will be related to the agent's needs, so in a state of "hunger" images that depict food would get valued higher. While keeping the set of assumptions sparse, we expect the agent to exhibit motivational patterns resembling the dynamics we know from every-day life.

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Knowledge-Based Approach for a Context-Aware Augmented Reality Assistance System

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Augmented reality is a very promising paradigm for intraoperative assistance in minimally-invasive surgery. However, information overflow caused by advanced assistance functions and visualizations has emerged as a new obstacle in bringing such systems into clinical application. For instance, the display of information about vital structures like nerves or vessels is desirable when those structures are in danger of being harmed. In other cases such visualizations only convey unnecessary or even distracting information. To avoid mental overload of the surgeon, it is necessary to restrict the display to relevant information, depending on each phase of the surgery. Based on the principal ideas of Neumann and Moeller (2008), we aim to automatically interpret the ongoing surgery and recognize the current phase. With this contextual information, we can provide an intelligent selection of visualisations.