

## **OPERATIONAL CLOSURE AND PSI: EXPERIMENTING WITH THE TRIGGERED RANDOM EVENT GENERATOR (T.REG)**

Matthias Braeunig & Tilmann Faul  
*T.REG Systems Research*  
*Bötzenstr. 3, D-79219 Staufen, Germany*

We are reporting here for the first time the results of a series of experiments obtained with the Triggered Random Event Generator (T.REG), an electronic device that was conceived to fully integrate the observer-participant in the generation of binary events. What sounds contradictory at first to random data generation is an attempt to “close the loop” between the subject and the environment. The operational closure (OC) is present in a trigger-feedback-loop, where the trigger is controlled by the subject’s physiological response to the outcome. Furthermore, a ‘Meaning-switch’ (M-switch) allows the participant to willfully invert parts of the binary sequence. The idea behind this explicit loop structure is that anomalous sampling may be the result of self-organization of extra-sensory information (psi). Thus the special arrangement provides a playground for psi, while the null hypothesis of ‘un-informed’ sampling is preserved.

Experiments have been conducted with 22 participants who performed in ten trials of approximately five-minute duration each. Triggers were generated with variable frequency around 1KHz modulated by the subjects’ EEG voltage measured at the forehead. Participants were asked to increase the pitch in an acoustic feedback of the cumulative deviation scores. Three independent hypotheses about the endpoints of the sequences were tested: 1) The outcome in mean and variance is compatible with chance expectation ( $H_0$ ); 2) M-switch gain correlates positively with trial number, indicative of individual learning ( $H_L$ ); 3) M-switch gain correlates positively with participant number, indicative of ‘morphogenetic’ learning ( $H_M$ ). Further, the frequency and duration of M-switch application was analyzed to extract useful psychological variables. These were correlated with the physical outcome variables to test a hypothesis put forward by the Model of Pragmatic Information about the expected number of significant correlations ( $H_{MPI}$ ).

Results did not show any indication of anomalous sampling or learning. However, subjects appeared to be generally more successful with a built-in pseudo random event generator than with the sampling from the true random states. This may be explained by the finite length of the sequences and expectancy about the outcome. Psychological reaction to up- and down- runs of the feedback was observed in M-switch behavior. The observed statistically significant increase in correlation between physical and psychological variables has to be taken with caution as it is sensitive to the choice of variables.

We discuss the results in the light of the concept of operational closure and think that it is still valuable to explore this approach further. It may be important to improve the closure on the side of the feedback providing a higher degree of integration combined with a lower sampling rate to make the loop tighter and more appealing to the subject.

[Email: Matthias.Braeunig@Uniklinik-Freiburg.de]