

of acquaintance) with the objects or events perceived.

According to (R), a momentary episode of experience is directed toward the present but also something is retained from the immediate past experience (and, perhaps, a small portion of the future is anticipated, see Husserl (1893-1917). Generally, (R) is spelt out in an intentional way (I): an experience contains different representations with modes of temporal orientation. It is in virtue of these different modes of presentations that the momentary experience can embrace the immediate past as well as the present. It is hence hard to see how this view could be made compatible with (N) or (S). Even if it the idea that an act of acquaintance can relate us to the past and one can conceive of different types of acquaintance (see Russell 1912), it doesn't seem possible to be related in the same act of acquaintance to the past and to the present, precisely because acquaintance to the past cannot be the same act as acquaintance to the present.

Following Hoerl (2013), I will argue that (E) is better understood as implementing and being motivated by (N). If one conceives of experience as having representational content, (R) would reduce to a resemblance theory where the *explanandum* (duration and succession) is presupposed by the *explanans* (the experience of succession which imitates the structure of enduring objects and events).

Despite the fact that some prominent proponents of (E) defend some version of (S) (Dainton 2008, Foster 2000), I will argue that this is not the better way to spell out (E). For (E), experience inherits its temporal structure from the temporal structure of its objects of awareness, but for (S) the objects of awareness are sense-data, and it is difficult to make clear how a sense-datum (whose existence is defined by its being present to one's mind) can have a temporal structure that can inform that of the experience itself.

On the contrary, we should frame (E) in relationalists terms (R): one can

coherently claim that experience has itself a temporal structure only if one conceives of perception as an acquaintance with objects and events. Hence (E) can easily accommodate the *Inheritance Principle*: being fundamentally determined by whatever one is perceptually aware of, perception inherits the temporal structure of the event perceived.

On the contrary, (R), with its commitment to (I), faces a problem. As Soteriou (2013: 38) points out, a state with a representational content is what Geach calls a "non-successive unity", which doesn't have temporal parts. It remains hence mysterious how one can explain that perception seems to unfold over time in the same way as the perceived events do, if one is committed to (I). An intentionalist is committed to claim that the successive parts of an event are represented simultaneously in a content that doesn't have temporal parts. This is not an insurmountable problem, but it makes (R) less suited to account for the *Inheritance Principle* than (E).

## POSTERS DAY 1

### Attentional enhancement of auditory mismatch responses: a DCM/MEG study

Ryszard Aukstulewicz and Karl Friston  
*University College London*

Attention and expectation have similar behavioural effects, both enhancing detection and facilitating recognition of stimuli. However, they have opposing effects on early evoked neural activity: attention typically enhances event-related responses, while expectation reduces them. This opposition has been reconciled in the predictive coding framework, where prediction errors (lower for expected stimuli) are weighted by precision associated with attentional modulation. The aim of this study was to corroborate the predictive coding account of attention and expectation based on MEG data and modelling. Temporal attention and expectation were orthogonally manipulated in an auditory mismatch

paradigm. Brief tones (sine waves at 6 possible frequencies) were presented in a roving oddball sequence over the course of multiple trials. In a given trial, the tones could be played at two latencies with 50% probability for each latency. Participants (N=20) attended to one of the latencies (randomised across blocks) and were instructed to detect tone omissions. As hypothesised, analysis of evoked responses revealed that expectation and attention had opposing effects on ERFs. Crucially, mismatch negativity (response to deviants vs. standards, reflecting a violation of sensory expectation) was enhanced by temporal attention at 190-210ms post-stimulus over frontocentral channels, speaking against its supposedly pre-attentive nature. The differential effects of attention and expectation were modelled in a canonical microcircuit using dynamic causal modelling of evoked responses, comparing models that allowed for extrinsic vs. intrinsic connectivity modulations at different levels of processing hierarchy from sensory to frontal areas. The modelling results cast mismatch negativity in terms of the recursive interplay of sensory predictions and prediction errors. On the other hand, temporal attention was linked to the gain of inhibitory interneurons at early stages of the processing hierarchy, extending previous empirical and modelling work on the role of precision of prediction errors in perceptual processing.

### "One minute" - Depiction and quantification of subjective 1 minute

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Scientists and artists alike, attempting to understand the world in all its complexity, are forced to reduce its dimensions into an affordable representation and experimental framework. As artists and scientists will often take very different approaches, they would at best complement each other in their performative depiction of the world. Yet the potential richness of artistic and scientific collaboration may lie in **frameworks that are commonly defined** and then **explored with both artistic and scientific actions**. Common frameworks are defined through universal units. In our "Measure for Measure" ongoing project we survey the subjective measures of individuals across countries and cultures. An experimental framework is set to survey how people use common units as basis to elaborate their conception of time, distance, weight *etc.* The objective scientific methodology developed in this project, namely a repetitive quantitative experimental protocol is contrasted with the subjective individuals' idiosyncratic measures. These measures are then: (i) transferred into new media as basis for artistic installations and (ii) serve for the scientist's objective statistical hypothesis-driven representation.

We focus here on the notion of **One Minute** - depicting its subjective expressions and quantifying its duration, using a novel protocol. In this we aim at providing and sharing data with the research towards better understanding the cognitive, physiological basis of short-time estimations. In parallel we wish to reveal how the personal, subjective conception of one's time is tuned (or resists...) in an era where everyone is constantly exposed to time standards that may fit the average person and therefore perhaps to actually no one.

**Experimental methodology.** *One Minute* evaluates subjective time units. Individual participants (>100 recording thus far) are requested to sit still in front of a camera and close their eyes for a duration of one minute and to remain

still once opening their eyes until given a sign to end the session. Typical recording includes 20 seconds of recording pre-measurement and elapses 2'30" to include post-measurement recording. The protocol assures isolation from visual signals and leaves participants to concentrate on inner cues. These may include un/conscious link to breathing, heart-beat rhythms or yet other cognitive processes. The protocol can be in principle replicated in any settings and could thus be crowd-sourced. Participants are suggested not to count. A variant may include a short post-measure interview. In return to the voluntary participation, each participant receives a signed certificate with his *Personalized Time Unit* specifying the date and time of his measure.

**Artistic depiction.** The artistic installation consists of repetitive projection of series of videos synchronized by the initial eye-closing instance on a screen within a dark room. Each eye pair opens to signify the end of the individual's subjective minute, resulting in a dynamic depiction of the differences within the collective.

**Data analysis.** Ongoing scientific analysis includes distribution statistics, correlations between individuals' estimated time, age, sex, time-of-day. Further, we attempt to quantify temporal facial changes as eyelid movement, changes that may be accounted by breathing rhythm as well as extract heart-beat measures from rhythmic changes in skin redness. Poster will include discussion of preliminary data analysis (mean subjective minute=75.8; median=72.4; N=105) T-test and ranking test (Wilcoxon) ( $p\text{-value}(\neq 60) < 10^{-4}$ ) image data analysis (see above) as well as a video installation. *One Minute* is a participatory project - we suggest that participants to the workshop will be able to measure their subjective minute.

## Phenomenology and neurophenomenology of time-consciousness – are these two methodologies really "partners in a dance"?

Leon Ciechanowski  
Warsaw University

In this talk I will describe and evaluate the phenomenological and neurophenomenological proposal of the analysis of time-consciousness, or time apprehension. Francisco Varela, the scientist responsible for the development of neurophenomenology (Varela, Thompson, & Rosch, 1991), postulated a connection of phenomenological analysis of subjective experience with neuroimaging methods. He advocated a study of lived experience and its biological basis. We may find such statements (Petitot, Varela, Pachoud, & Roy, 2000: 267) regarding neurophenomenology that it mixes "...both modes of discourse as if they were partner in a dance, as if they were one, for that is what a naturalized account of phenomena means, and only in action can we see it happening. Given the importance of the topic of the experience of temporality, let it be clear that I consider this an acid test of the entire neurophenomenological enterprise." I will inspect whether these two dancers really fit together.

The talk is divided into a several sections. First, I will describe the phenomenological analysis of time-consciousness, depicting briefly its background and necessary tools from a broader perspective of the whole phenomenological project. Next, I will discuss the neurophenomenological model of time apprehension, which is claimed to draw strongly from Husserlian methodology, with the addition of naturalization. This analysis will be followed by a comparison and criticism of the two methodologies, in the light of the exploration of time-consciousness. Finally, I am going to evaluate both approaches taking into consideration contemporary research of human experience of temporality,

Tuesday, 30.09.2014			
13:00	Festsaal	Paula Droege	Consciousness is structured by time
14:00		BREAK	
14:10	Festsaal	Warren Meck, Barry Dainton	Models of mental time
16:10		BREAK	
16:30	Festsaal	Roberta Locatelli	Models of temporal experience and the structure of perception
17:15	Festsaal	Hedderick van Rijn	Accounting for alterations in the subjective experience of time in computational models of time perception
18:00	144	posters	
Wednesday, 1.10.2014			
9:30	Festsaal	Silvie Droit-Volet, Yvonne Foerster-Beuthan	Subjective distortions of time
11:30		BREAK	
13:00	Festsaal	Eve Isham	Contextual elements determine the perceived time of intent and action
13:45	Festsaal	Teresa Pedro	Does the distinction between time represented and time of representation solve the paradox of time perception?
14:30		BREAK	
15:00	144	posters	
16:00	Festsaal	John Wearden	Passage of time judgements
17:00	Festsaal	ART EVENT	
Thursday, 2.10.2014			
9:30	Festsaal	Dan Zakay, Chris Hoerl	World time and mental time
11:30		BREAK	
13:00	Festsaal	Valtteri Arstila	Simple view on postdictive effects
13:45	Festsaal	Marc Wittmann	The body, the self and the experience of time
14:30		BREAK	
15:00	144	posters	
16:00		FINAL EVENT	