

Perception from inside out

Liliana Albertazzi, LabExP, University of Trento

Studies on anticipation have mainly been addressed in terms of forecasting and foresight. These proposals, notwithstanding their differences, ground on high level dimensions of thinking (inferences based on past experience, wagers, rational design of computational models based on big data repository, predictions, and so on). With few exceptions, current proposals are in line with the dominant conception of inferentialism in science, often based on probabilistic computations (Gregory 1998; Rock 1983), augmented by the development of so-called computational predictive models. Inferentialism maintains that, in perceiving, our *brain* regularly and continuously applies probabilistic hypotheses based on past experience to the surrounding physical environment in order to make sense of it. However, this framework draws no semantic distinction between the meaning *externally* assigned to the metric stimulus by scientists and those *internally* perceived by subjects in awareness, for the simple reason that they are assumed to coincide: the stimulus essentially becomes a *description* and an *explanation* of the perceptual presentation and vice-versa (Albertazzi, van Tonder, Vishwanath 2010; Vishwanath 2005). Conceptually, the inferentialist approach conceives *anticipation as an activity of scorekeeping*; factually, it would reveal a constitutive fragility of our capacity to orient ourselves in the environment surrounding us, and its scant reliability. Within the probabilistic framework, in fact, it is entirely inexplicable why, for example, once I know on the basis of past experience (say, because I myself drew them) that the vertical lines of the Hering illusion are parallel, I compellingly see them as curved (Hering 1920/1964). And the same holds for other so-called ‘illusions’ of which our daily experience is enriched starting from phenomena of occlusion (i.e. completion of the percept in absence of stimuli).

There are several unquestioned assumptions at the foundations of inferentialism and its concept of anticipation. For example, the assumptions that the ontologically *unique objective* reality is described by physics; that our perception of reality is ruled by psychophysical laws of behavioural response to physical stimuli according to a linear and uni-directional order of cause and effect; that the same predictive models are a product of causally efficient laws based on previous information; and that the perception of *qualities* is not a matter for scientific analysis, because it is *subjective* and not explainable in terms of third person account. However, when we realize that species very different from ours are ‘victims’ of the same ‘illusions’ (Sovrano, Albertazzi, Rosa Salva 2014;

Sovrano, Da Pos, Albertazzi 2015), the mainstream explanation becomes even more puzzling: should we believe that this widespread 'erroneous' behaviour in living organisms is induced by nature?

Put briefly, the inferentialist explanation of structural perceptual ambiguity is cumbersome and ecologically implausible. Yet its computational applicability (for restricted purposes), consisting in the mere transformation of syntactic structures into other syntactic structures, makes it difficult to dismiss in current science. Most of all, an inferentialist viewpoint on reality only partially explains what it means to perceive, which is essentially a conscious, subjective, meaningful, qualitative process imbued with value and emotional tone, and dynamically anticipating the lines of its forward potential deployment.

In the field of the studies on anticipation a novelty is given by the studies of future anticipation (Poli 2017) requiring a strong reliance on imagination, in other words the capacity to conceptually present oneself with what is not (or at least not yet) there. Imagination, however, is already a high-level psychological dimension, involving a great use of *mental* completions. The grounding roots of imagination (and other conceptual thinking as well) are given by the microstructure of actual presentations (very short durations) revealing the grammar of anticipation in its microgenesis, and consisting in unavoidable subjective *perceptual* completions occurring at the very first stages of consciousness (Kanizsa 1979).

I shall present a few phenomena in visual and acoustic perception, showing the presence of future as a basic microgenetic dimension of perceiving (see also Albertazzi 2017). Specifically, I shall present how anticipatory structures work in stereokinetic phenomena, perception of causality, perceptual transparency, and temporal acoustic dislocations. Difference is also highlighted between how these phenomena are considered, addressed, and explained by a neuroscientific approach vs. a qualitative Gestalt approach to the topic of the temporal dynamics in its very first stages of our perceptual experience (alpha brain oscillations in EEG, task independent, relying on discrete snapshots vs. the reorganization of the stimuli sequence in awareness according to meaningful units). It is shown that the anticipatory behaviour of consciousness contains an *internal*, qualitative, and predictive model of itself, which is not explained by *external* causes (Albertazzi 2013, 2015; Albertazzi, Louie 2016; Poli 2017). We live neither in a static present nor in a series of unrelated snapshots (as assumed, for example, by Crick, & Koch 2003). In other words, what occurs at the level of brain circuits does not explain the nature of qualitative, conscious awareness (see Libet 1973, 1985; Libet et al. 1991). Unity of consciousness is an assumption necessary to explain our conscious

life, and it implies anticipatory processes already in its microstructure. <https://plato.stanford.edu/archives/sum2015/entries/properties-emergent/>