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Postscript

'Aheadness' — Prospective Adaptations towards the Actual

'The emergence of a present now does not provoke a piling behind of a past, and a pulling of the future. Present now is the slippage of a future to the present...' (Maurice Merleau-Ponty, 1962)

Abstract: *The term 'aheadness' has been coined and applied in order to account for the variety of embodied and enactive aspects that shape attitudes, which in turn impact the selection of stimuli in a prospective way. Such an approach is body-centred rather than brain-centred. Consequently, 'predictive coping' is taken to be a better explanatory candidate than 'predictive coding'. As the cognitive organism is never ignorant or neutral, 'aheadness' comes with attitudes, pre-shaping the forthcoming according to needs, moods, emotions, wishes, hopes, fears, etc. Anticipation is thus more like a tendency towards achieving a maximum grip on prospection brought about by 'predictive games', rather than by striving for the minimization of prediction-error and avoidance of surprisal.*

Keywords: 'aheadness'; aboutness; embodiment; enaction; stimuli-seeking; predictive *coping*; prospective intentionality; predictive body; predictive games; limits to predictability.

A postscript is generally an opportunity to summarize the core ideas of the contributions in a collection and to provide a kind of integrated perspective on the project. However, it can also be a chance to consider the contributions at somewhat of a distance from the provided landscape and redirect the theoretical gaze towards meeting the

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‘where-to-now?’ question. When there is a remarkable level of excellence in the essays, as is the case here, a risk-free summary is secured, but virtually little room is left for novel insights. Hence, the second option presupposes deprivation of the armchair-comfort based on the evidences from the cutting-edge research, but (at least theoretically) offers an opportunity for widening the vista and eventually detecting issues that might be found stimulating for further investigation. Though it is probably more daring, my decision is to favour the latter, with the intention of focusing less on any explicit criticism of the mainstream theories (though some form of it is unavoidable) and more on seeking possible alternatives, even if it (only) means putting the issue within the broader context of the life of the mind and making us sensitive to some neglected aspects already present in the philosophical discourse.

1. Future First

There is little doubt that (as I hope this collection demonstrates in a scientifically convincing way) the capacity to devise the most plausible scenarios of the future is one of the most fundamental traits of the mental faculty. As Francois Jacob nicely puts it: ‘one of the deepest, most general functions of living systems is to coordinate with the future’ (Jacob, 1982, p. 66). It is, to a great extent, in the same line of thought, but with reference to neuroscientific explanation — that is, applying it more specifically to the central neural system — that Daniel Dennett confirms: ‘[t]he fundamental purpose of brains is to *produce future*’ (1991, p. 177, emphasis added).

In several of his works, and specifically in *The Feeling of What Happens* (2000), Antonio Damasio develops the idea of ‘extended consciousness’, which is described as relying on memory and powered by the autobiographical self, in contrast with the ‘unconscious Proto-self’ and ‘core consciousness’. While the latter two terms are characterized by a strong sense of being in the present, extended consciousness is marked by a sense of the past and the future. (This is expressed in even stronger terms with respect to what he calls the higher extended consciousness.) As he explains: ‘Extended consciousness goes *beyond the here and now* of core consciousness, both backward and forward. The here and now is still there, but is flanked by the past, as much past as you may need to illuminate the now effectively, and, just as importantly, it is flanked by the *anticipated future*’ (*ibid.*, p. 195, emphases added).

This kind of consideration is already to be found in his *Descartes' Error* (1994/2000) as he emphasizes the relevance of 'prediction of future' (*ibid.*, p. 229) from a neuroscientific perspective and of its consequences 'by way of imagining scenarios and planning actions conducive to achieving the best imagined scenarios' (*ibid.*, p. 229). Arousal of emotions and feelings are, for instance, also connected 'to predicted future outcomes of certain scenarios' (*ibid.*, p. 174).

This line of thought leads to the conclusion that the present is to be seen less as straightforwardly inherited from the past than as a prospective derivation from the future; it relies less on the ready-made patterns of remembered experience and more on the projections of the possible. And yet anticipation is, in an intricate way, bound to memory. Damasio's phrase of 'a memory of the possible future' (*ibid.*, p. 239) nicely captures just this aspect. It all gets clearer as we learn that 'imagining the future depends on much of the same neural machinery that is needed for remembering the past' (Schacter, Addis and Bruckner, 2007, p. 657).

Coming from a whole different methodology, and yet pretty much along the same line of thought, Jan-Luc Nancy claims that: 'we have a "future" [*avenir*] and a "to come" [*à venir*]; we have this "future" as a "past", which is not past in the sense of being the starting point of a directed process, but past in the sense of being a "curiosity" [*bizarrierie*]" (the "Greek miracle") that is itself intriguing and, as such, remains still "to come"' (2000, p. 21). As Merleau-Ponty pregnantly puts it: 'The emergence of a present now does not provoke a piling behind of a past, and a pulling of the future. *Present now is the slippage of a future to the present...*' (1962, p. 479, my emphasis).

Not only is nowness 'past-containing' (as already recognized by St. Augustine), it is also future-containing — and multidimensional (see e.g. 'the fourfold structure of nowness'; Varela, 1999, pp. 302ff.). All too often we take temporal linear distribution literally and uncritically; hence, we tend to strictly localize its segments. Although, as investigators, we draw strict boundaries in our conceptual system between past, present, and future, there clearly are no such demarcative lines in the minds we are investigating. In the life of the mind, it is neither the case that the past is gone (and 'behind') nor that the future is blank (and 'ahead'), but both live in the present by fuelling its contents with memory and anticipation.

What shapes mentality is thus not so much faithful and intentional mimicking of the presently given, as it is the projecting of what seems to be most likely the case in the world we engage. According to this

explanation, the future happens — that is, makes its stamp upon the mental — before it is recognized by the conscious mind as belonging to the present. In that sense, ‘the future need not merely happen; to some extent it can be caused’ (Freeman, 1999, p. 168).

2. ‘Aheadness’

A good number of current theories take for granted that anticipation is mainly instantiated through predictive processing (Friston and Ke, 2007; Friston, 2009; Clark, 2013; Harkness and Keshava, 2017; Metzinger and Wiese, 2017) and predictive coding (Rajesh and Ballard, 1999; Hinton, 2007; Bastos *et al.*, 2012; Hickok, 2013; Kogo and Trengove, 2015). Predictive processing theories of cognition have provided us with novel insights and fine-grained accounts regarding the kind of mental power that has been widely discussed in past decades and has proven to be influential. Yet, a critical reader may observe that there is a kind of stagnation in this discourse and there has been for some time. If it is so, we might be encouraged to try to probe other directions of investigation, as that may eventually prove philosophically rewarding. Such a critical observer may also object that, in so far as current theories of prediction are generally brain-centred — that is, treating prediction as almost exclusively a cerebral capacity — a shift towards a more encompassing picture may be a way to escape the kind of ‘*pars pro toto*’ — taking one element as representative of the whole. This also allows us to expand the scope of concern so that it becomes sensitive to forms of embodiment and enaction, without neglecting an agent’s subjectivity, which we thus far treated rather peripherally.

In this section, I want to (at least) outline the idea that anticipation is more basic and variegated than habitually recognized and, consequently, to put forward justifications for the assumption that neither is anticipation to be identified with, nor reduced to, prediction. A precondition for the fortuitous accomplishment of any prediction is that the anticipatory scene is sufficiently rich in *variation*, for that is (simply after the Darwinian principle) what increases chances for prediction to turn out successfully.

Such an attitude that promotes the widening of the anticipatory palette as advantageous to cognitive organisms is clearly not in accord with dominant views that seek a shortcut to error-free reactions and the minute fine-tuning of what appears to be a rather late outcome in

the chain of prediction, ignoring the fact that other motivational elements have already put their stamp on the process.

This is a modest attempt to ‘precede’ in that direction, basically suggesting that prediction is not an isolated phenomenon reducible to highly specialized probabilistic calculations, but rather a capacity of living, embodied, active, and engaging cognitive organisms mentally equipped to deal with anticipations. It is best understood in association with the broad horizon of participatory *coping in the world* of which we are ‘always already’ part of. This is by no means intended to diminish the import of theories of predictive processing; it is just to say that they provide refined but fragmentary explanation of the complex nature of the mental system involved in anticipation.

At this point it seems philosophically justified to ask: are there processes that precede prediction and, if so, what might they be? Or, in a more straightforward form: is there anticipation before prediction? And in yet another wording: are there signs of anticipation before they become stimuli-candidates for predictive processing? Posing these questions is in accord with the general intent of this postscript, i.e. not so much to pinpoint some specific already-detected and elaborated features, but rather to zoom-out and look at the bigger picture. This modification of methodology may, eventually, at this more general level, grant us a fresh perspective on the phenomenon as a whole. Moreover, it may, on a more specific scale, support the conclusion that prediction takes place on the cognitive terrain already pre-shaped by acts of prospection and anticipation.

In order to do this, I will introduce the concept of ‘aheadness’ — a unifying term that is used to account for a wide variety of mental dispositions and skills that play a role in anticipation. An additional reason why I prefer ‘aheadness’ as a general term over a spectrum of more specific concepts already in use (such as protention, prospection, forwarding, etc.) is a conviction that the process of aheadness is a result of intense exchanges among various instances of mentality, including suggestions from memory, hints from the background, intuitive guesswork, leaps of imagination, emotional attitudes, motivational drives, skills, moods, prejudices, etc. Hence, this process cannot be localized or reduced to a single organ or form of processing.

By promoting the notion of ‘aheadness’ I want to emphasize that mental mechanisms involved in anticipation entail more than cerebral predictive processing, precision estimation, weighing of risks, error-minimization, etc. It is meant to integrate manifold environmentally

conditioned embodied-enactive reactions that are only partly represented through, for instance, the optimization of prediction precision.

In order to at least outline the idea that enacting is about the environment but always begins on the inside, let me add and clarify that externalism would have no chance without the cognitive organisms' actively seeking to make sense of the interaction with their surroundings. Support for this claim can be found in the following: 'The environment doesn't *teach* the organism what it should know; the organism must make its own sense of the environment, and there is no specific way in which this can be done' (Rosenfield, 1988, p. 10). Indeed, the environment can matter only if the proper forms of embodiment attune in a way that allows for an appropriate grip within the playground of enaction. Affordances afford nothing unless there is an agent that makes them matter as interaction with his or her environment unfolds; they themselves do not provide instructions for action (see Radman, 2013). Affordances can be relived only through agential interventions. This is where 'aheadness' comes into play. And it does so by reference to that which can be best understood in terms of a tendency towards 'maximizing the grip' (Dreyfus, 2002; 1995). As Hubert L. Dreyfus says: 'Maximal grip names the body's tendency to refine its responses so as to bring the current situation closer to an optimal gestalt' (2002, p. 367; also e.g. Rietveld and Brouwers, 2017). Rather than seeking the right process to 'minimize the error' (chiefly Hohwy, 2013), the predictive mind, after Dreyfus, would rather aim at and act towards finding the *maximum grip* and *optimizing the gestalt*, both of which I see as future-oriented. If we accept such a view, and such rhetoric, we may find enough valid theoretical reasons to want to talk about 'predictive *coping*' rather than 'predictive *coding*'. And also to prefer '*maximizing the grip*' over '*minimization of prediction-error*' and surprisal, as the former aims at optimization of attunement, based on a broader scale of variations, without necessarily bothering to calculate the risks in the first place.

One could say that the prediction of a particular situation would be unfounded or ill-informed if it were not instructed by the variety of enactive motives and embodied significations that create a broader horizon of anticipation to facilitate orientation within the 'blooming buzzing confusion' (William James, 1890/1950) and provide 'criteria' of inhibition and selection relevant for the further fine-tuning of prediction.

If we were to (speculatively) diagnose the current theories of prediction, they may be labelled as cautious, defensive, and conservative

— guided by the dominant demand, i.e. the fear of committing error. However, let us be reminded that we are by our nature curious beings (already Aristotle defines humans in such way) and that genuine curiosity (which clearly has forward orientation) can hardly conform to the ‘conservative’ character of predictive processing. Being curious and longing for the novel cannot but mean that one wants to avoid being inhibited by the ideal of error-free prediction and that it is likely that the experienced cognitive organism accepts the possibility that errors may occur at any time and particularly when a step is made away from established routines.

Further, there are three elements that mainstream theories of prediction are, in my view, not sufficiently sensitive to, or refer to rather sporadically, but are constitutive of ‘aheadness’ and play a significant role in shaping the forthcoming: emotions, imagination, and the non-conscious. Speculating on other directions the research on anticipation and prediction may take as it develops, I believe that it is these three components of the mental that require more thorough scientific attention in this specific context. However, when I think of emotional attitudes as being dimensions of ‘aheadness’, I do not have in mind ‘affective forecasting’ (predictions about how one will feel in the future; e.g. judgments of what will make us happy) (see Wilson and Gilbert, 2003; Zhang, 2012), but am instead basically interested in how affection pre-shapes anticipation. It is thus not about predicting emotions but rather about the role of emotions in prediction (see Huron, this issue; Lowe and Ziemke, 2011). As to imagination, although we read about how ‘the idea that memory, *imagination*, and predicting what might happen in the future are intimately linked is not new’ (Mullallay and Maquire, 2013, emphasis added), much more can be studied with respect to the intricate interrelationship between imagination and prediction (however, see e.g. Kirchhoff, forthcoming; 2015). Finally, how can we explain that anything can be of relevance in the dynamics of prediction even before it leaves traces in the sensory, except by recourse to the non-conscious? Andy Clark discusses ‘nonconscious sensory pickup’ and clarifies: ‘...stimuli that do not make it into conscious awareness may nonetheless be highly processed, and this information can be used to guide behavior’ (Clark, 1999, p. 13). (Unfortunately, this too cannot be expounded here in detail.)

I believe that if we move from simpler forms of behaviour, such as motor intentionality, to yet more complex (or ‘high-level’) ones, such as social cognition and interpersonality (also intercorporeality;

Radman, 2014), then it becomes even more evident that prediction is not mainly about the optimization of precision. For instance, when we speak, that is, *act towards* expressing ourselves verbally, we seek the best possible form for bringing about contents intended to be shared, but it does not seem that the underlying mental mechanisms engaged in this sort of prospective behaviour are solely occupied with e.g. minimization of surprisal. Further, in word-choice (which can also be seen as a form of anticipation), just as is the case with thinking, we *act towards* accomplishing the mental task, the outcome of which we anticipate by applying standards of satisfaction without having to necessarily consult the possibility of making any errors and without computing how to avoid or minimize it. One can actually say that in these cases there is little evidence of prediction in the strict sense of the word, but that the anticipatory mental scene is rich with implicit ‘meaningfulness’ which is there before it gets spelled out in words.

In order for ‘aheadness’ to appear somewhat less abstract, and to illustrate how it may be used to account for very elementary forms of coping with the world, let me exemplify it by saying that: the forthcoming can be ‘envisaged’ simply by the next step in walking — the motor can instruct the mental yet to be experienced; touch may impact and direct the course of the forthcoming interpersonal exchange; gesture may already contain the gist of the sentence to come; the smell can evoke memories converted into experience of a future event; the sight of a dish may stir the appetite before tasting; the unexpected sound may announce drama or danger before it happens; the voice may ‘colour’ the ‘*Stimmung*’ of a dialogue as it develops; a word or particular phrase may create (mis)trust as conversing progresses; the hostile glimpse may signal that you can hardly expect friendliness; silence may make expectation unpleasant or warring; the touch of the brush on the canvas may evoke contours of the future picture; etc. (Streeck and Jordan, 2009a,b). This all amounts to a conviction that anticipation is, at least as it is manifested in expectation, never blind or neutral. It always comes equipped with competence in skills and coping that captures the forthcoming in terms of guesswork inspired by the environmentally-enactive hints of which we are mostly unaware, but which nevertheless play an important role in it.

3. ‘Aheadness’ Comes with Attitudes

Because our minds are permanently spontaneously devising scenarios of the forthcoming, the future never appears blank or blind to us. It is

rather invested with urges, motives, expectations, guesses, preferences, trust and mistrust, confidence and lack of it, etc. that play an important role in recruiting stimuli-candidates (to which I come below). ‘Aheadness’ that has prospective orientation is thus not neutral or naïve; it always comes accompanied with attitudes.

By ‘attitude’ I mean not only moods but also more complex mental states, emotional and cognitive. Almost all textbooks of philosophy of mind, usually in their introductory pages, define what mental states are and they do so by exemplifying them as: needs, interests, beliefs, hopes, desires, wishes, fears, doubts, etc. We are seldom aware that all of these mental states display a prospective nature and are future-oriented. As such, they are in the service of anticipation and play a role in pre-shaping prospective behaviour.

‘Aheadness’ is also subjective (what else can it be?), biased, and prejudiced; it includes the guessing and weighing of backgrounded expectations, emotions, and impulses of imagination. Nothing that goes on in our minds is spared from this subjective cognitive whispering that has its role in the shaping of behaviour and preparation for action.

From the perspective of this more encompassing and integral nature of anticipation, as exemplified by the concept of ‘aheadness’, we have reasons to assume that the brain’s ‘predictive processing’ cannot be the sole player in this kind of mental game that is continually going on in our minds. As already mentioned, there are moods and motives, intuitions and inclinations, prejudices and preferences, beliefs and biases, fears and fancies, and it is inconceivable that they have no impact on the processes engaged in prospection.

Being a property of the active beings that we are, ‘aheadness’ is never just an elusive inclination in favour of doing something or blind bias against it, but always also entails the weighing of options for action and the predicting of its outcomes in an implicit, backgrounded way. It usually follows the simple if-then pattern: if I make a step, then I will move forward; if I bite a chocolate, then it will feel sweet; if I do not stop pouring water into the glass on time, then it will spill over; if I run, then I will arrive sooner than if I walk; if I cook the food longer, then it will be more tender; if I don’t brake on time, then the car may crash; if I take more pills than prescribed, then I might be poisoned; etc. However, I do not think that this kind of general behavioural ‘wisdom’ parallels what the proponents of error-minimization and avoidance of (negative) surprise have in mind

(unfortunately, elaboration of this aspect would take more than the format that this postscript allows).

This can be found in C.I. Lewis's (1929) book, where he says: 'The whole content of our knowledge of reality is the truth of such "if-then" propositions, in which the hypothesis is something we conceive could be made true by our mode of acting and the consequent presents a content of experience which, though not actual now and perhaps not to become actual, is a *possible experience connected with the present*' (p. 142, emphasis added). And, in a form of conclusion, he further states: 'Hence the reality of any object is known, not by its being presented simply, but by judgment or interpretation which is *predictive*' (*ibid.*, p. 143, emphasis added).

I am in basic agreement with Lewis except for the fact that what he sees as 'propositions', I understand as implicit guesses — embodied reactions at the organism's disposal shaped by the backgrounded repertoire of possibilities (Radman, 2012) that are activated according to agential intents and situational circumstances. A possible consequence of my view is that we now do not perceive objects as stripped of all human 'clothing' (intervening), but as entities equipped with the agent's intents and placed on the stage of aimful behaviour.

Seen from such a broader perspective, 'predictive coding' is a sophisticatedly singled-out segment of the theoretical story on propection — a reduction that is revealing, but also impoverishing. By pinpointing the very specific mental mechanisms involved in prediction, much has been left out of the scope of concern. With a widening of this scope, there may open a possibility for the recognition that we do not act merely as 'predictive machines' but rather as embodied agents governed by organismic 'reasons' (see e.g. Radman, 2017), shaped and moved by interaction with our natural, social, and cultural environment. This exceeds cerebral computing in the service of prediction and makes us sensitive to a variety of possible forms of coping with a wide scope, i.e. from biological to cultural, from corporeal urges to aesthetic preferences, from sexuality to canons of beauty — all of which have their share in creating a network of expectations that allows for the feeling of 'being always already in the world' that we get to recognize from ahead.

If 'aheadness' were ignorant or neutral (that is, devoid of all the traits mentioned above), it would hardly play any role in selecting stimuli; an aspect to which I now come.

4. Seeking the Stimuli

We are to be aware (or rather reminded) of the simple, but profound, fact that not everything in the environment and not everything going on in our mental world can matter, and thus not everything has the potential to play a role in anticipation. Namely, it is impossible that we attend to all potential stimuli for we would be overburdened and would not be able to figure out what could possibly be relevant for the agent. If everything mattered, nothing would make sense; for meaningfulness (in language and perception, but also in all other forms of cognition) can be established only within limited, repeatable data. In that sense, the future cannot be about everything possible but can only be cognitively instructive if anticipation selects from the sensory and promotes anonymous candidates into those potentially relevant to the arena of acting.

Input has a chance to become mentally relevant only if the cognitive organism finds ‘reason’ for it to matter in some way. That can happen (as already emphasized above) if attitudes shaped by ‘aheadness’ provide guidelines for singling out sensations recognized by the organism as being cognitively relevant in particular situations or instructive for prospective behaviour and courses of action. It is for that reason that I believe ‘aheadness’ is eventually a better conceptual tool to account for the complex network of significations that potentially matter within the horizon of expectation. In the case of perception, as Walter Freeman says, it ‘depends dominantly on *expectation* and marginally on sensory input’ (quoted in Nicolis and Tsuda, 1985, p. 215). Along the same line of thought, the art-historian and philosopher of art Ernst Gombrich says: ‘...we would have to speak of expectations, guesses, hypotheses which influence our experience. We have frequently seen that these expectations can become so strong that our experience *runs ahead of the stimulus situation*’ (Gombrich, 1960, p. 303, emphasis added). As if refining the claim further, Michel Bitbol and Pier-Luigi Luisi add: ‘...cognition is definitely *not* tantamount to a passive reproduction of some external reality. It is instead mostly governed by the activity of the cognitive system itself. To understand this, one must realize that it is the cognitive structure that *selects, and retroactively alters, the stimuli to which it is sensitive*’ (Bitbol and Luisi, 2004, p. 101, emphasis added). A sort of confirmation comes also from the literature in contemporary neuroscience that sees the brain as an organ that is actively reaching to stimuli (Rosenfield, 1988), suggesting that what happens within the neural dynamics is a permanent reorganizing

and rearranging of the stimuli landscape. New configurations emerge not so much according to the external dictate, but primarily according to anticipations that are capable of altering the ‘sense of stimuli’. It is no wonder that scientists appeal: ‘We need a theory of the brain that can account for how we can *give a sense to stimuli* in terms of their present context and our individual experiences’ (*ibid.*, p. 8, emphasis added).

There are enough philosophical reasons that speak in favour of the thesis that *we do not so much re-act according to the input, but rather act towards it*. As John Dewey insightfully formulated it: ‘the so-called response is not merely *to* the stimulus, it is *into* it’ (1896/1967, p. 359). Consequently, ‘The stimulus is something to be discovered...’ (*ibid.*, p. 370), and that can be done only in the prospective way. Seen in such a way, anticipation (and mental processing in general) is not initiated, and does not start with sensory input. Further support for this claim can be taken from Maurice Merleau-Ponty as he talks about giving ‘to “stimuli” a sense which they have not hitherto possessed’ (1962, p. 220). Andy Clark strengthens this point when he says: ‘...the organism selectively moves its body and receptors to try to discover the very *stimuli that it predicts*’ (Clark, 2016, p. 290, emphasis added). Pretty much in accordance with such an understanding is the claim that ‘[t]he organism both generates internal dynamics of probabilistic predictions embodied in neural networks that maximize survival (minimize free energy), and acts on the world in such a way as to *cause sensory information to conform to prior predictions*’ (Bizzari and Hipolito, 2016, p. 96, emphasis added).

The statement that ‘...attention selects stimuli before they appear...’ (Freeman, 2000, p. 32), and not the other way round, further supports the more basic claim that anticipation runs ahead of stimuli and that the process is dependent on a broader constellation of possible significations that moves and directs the mental system towards recruiting stimuli in order for them to matter in prediction.

A good way to understand what the concept of ‘aheadness’ is mainly about is to promote the ‘giving sense to stimuli’ as a key phrase that makes us aware that there is mental activity prior to the emergence of sensation on the mental scene, or that there is massive mental dynamics going on apart from predicting, in the strict sense, which will only later become, and be felt as, actual experience. According to the view presented here, ‘aheadness’ is to a great extent in charge of recruiting data in the sensory field and in such a way as to provide a reduced scale of possible significations that can then qualify

as candidates for predictions. In brief, the function of ‘aheadness’ is thus that of preparing mental conditions for the incoming stimuli to be recognized and selected as that which can potentially become a player in the *prediction games*.

This can be taken as a strong argument in favour of enactivism, whose proponents would rightly want to reverse the standard order according to which a stimulus directs activity by pointing out that actually the opposite is the case; it is activity that provides orientation among the silent stimuli and directs us to those that will — upon ‘giving sense’ — be ‘seen’ or ‘heard’. Favouring activities rather than physical objects is something for which one can find inspiration in John Dewey (e.g. 1896; 1916a,b); a modern counterpart may just add to the pragmatic tradition by stating that also from the contemporary point of view we grant cognitive priority to *enaction* rather than *entities*.

5. Implications for Intentionality

I see ‘aheadness’ as a dimension or quality of *intentionality*; in other words, it is to be considered as an *aspect of ‘aboutness’*. In theories of the mind, the very nature of the intentional relation is, as a rule, not questioned. This may leave an impression that presupposes a kind of straightforward and faithful match between mental representation and the object it is directed to. Intentionality, according to such an understanding, is married to actuality, implying that what the mental refers to is in synchrony with the presently existing. Yet from the perspective of the current discussion on anticipation, mental events are not synchronous replica of the externally or internally generated schema, but are rather projections based on backgrounded (unconscious) competencies and skills detached from actuality, that is, informing from ‘ahead’ and doing so away from conscious focus. Helpful, from the neuroscientific point of view, here is Walter Freeman’s saying that: ‘The brain and body *anticipate inputs*, perceive, and make movements without need for reflection. It is precisely this kind of *unconscious*, but directed, skill in the exercise of perception that the concept of intentionality must include’ (1999, p. 23, emphases added).

In order to further refine the concept of intentionality, now seen as not decoupled from anticipation, we need to reaffirm that aboutness is a trait of living organisms. Particularly one where their embodied and enacted minds are future-oriented and devise scenarios of the probable

based on interaction with the natural, social, and cultural environment, so that mental events are shaped in a prospective way. Such intentionality is in a profound sense 'lived' and 'enacted'. The idea can be already found in the famous (1992) book by Francisco Varela, Evan Thompson, and Eleanor Rosch. It is time to reaffirm their philosophical credo, particularly in this context, since significant parts of current theories on prediction are brain-centred and largely disembodied; they are asocial and ahistorical, and mostly focused on the functional aspects and the fine-graining of analyses of the mechanisms of prediction. Hence, they are seemingly less motivated to try to figure out what the cognitive sources of anticipation are.

A more consequent elaboration of this particular issue (for which there is here, again, no opportunity) would have to show that lived embodiment, including prospective intentionality, goes all the way down to the most elementary organismic levels. As Dewey remarks: 'Hand and feet, apparatus and appliances of all kinds are as much a part of it (thinking) as changes in the brain' (quoted in Clark, 2008, motto to the book). J. Scott Jordan's 'foot'-stories (this issue) may be taken as a good illustration of the shift away from the central-neural system, and as opening up a possibility for justly assuming that no instance of embodiment can be discriminated as being incapable of having a share in prospective intentionality. One of the most suggestive insights in that sense comes from Maurice Merleau-Ponty as he points out that significations can instruct the organic already on the level of reflexes, and states how '...our reflexes and perceptions will be able to aim at in the world, the area of possible operations, the scope of our life' (1962, p. 92, emphases added). All of the above fosters the conclusion that anticipation is not an exclusive privilege of the cerebral, and that it is justified to introduce the notion of the 'predictive body' and make it a standard theoretical tool, utilized in discourse, in a way that is akin to the common usage of 'predictive brain'. We should thus make mental efforts to become accustomed to this kind of 'decentralization' and try to make the idea plausible that anticipation is as much a matter of the bodily 'periphery' as it is in the command of the neural 'centre'. Indeed, (to make use of Wittgenstein) 'predictive games' are played by many more players and teams engaged in a huge variety of sporting disciplines. The very specific game, currently played on the narrow theoretical playground, with restricted rules, cannot be the only game in town, as the mainstream coaches want to convince us.

We come to further realize that intentionality, in the context of enacted anticipation, can be viewed as a condition of ‘readiness’ acquired by the body — a result of a self-organizing process that casts the net of potentiality for action ahead of actuality and, when the time comes, gets recognized in the present as such. To be ‘ready’ means here, among other things, to count on the fact that possible failures for awareness that predictions may not be realized the way they were preconceived are constantly with us. The possibility that predictions may prove futile is implicit to ‘aheadness’. Our memory is a witness that anticipations often fail, and that kind of experience is incorporated into the mental mechanisms involved in its ‘processing’. That is a true mercy for that means that the subject is not perplexed every time a forwarding ‘idea’ proves to be mistakenly preconceived. Readiness that anticipates failures prevents agents from being surprised and shaken every time a prediction-error occurs (which, if it was not prevented, would require additional time and energy for re-establishing mental equilibrium).

Because we lack a ‘God’s eye view’, errors in prediction happen all the time in spite of all the cautiously calculated risks of committing them. For that reason, errors do not come to us as a surprise (where one might cast doubt is on the insistence that all that the brain/mind does is first and foremost to spare us from the unexpected). ‘Aheadness’ includes the unpredictable, adapts to alternatives, and acquires this kind of experience and knowledge and integrates it into the background. The concept is thus not to be affiliated so much with an obsession for the rightness of prediction, as it is concerned with how to deal with situations when prediction-error occurs. As our predictions fail more often than not, our mentality is qualified to react promptly and adapt to alternatives.

6. Limits to Predictability

‘Aheadness’ provides a horizon of expectations, pre-shaped by motivations and coloured by moods and emotional attitudes, but it can never fully succeed in anticipation and provide a faultless prediction. And that is (at least on a more general plane) good news. If everything were predictable, life would be endlessly boring; it would be imitations of the preconceived, always an already corrected replica of anticipated modifications. It would be merely conforming to the foreseeable, without leaving an opportunity for the unexpected. True, there would be no mistakes, no wrong moves (quite likely no

frustrations due to deprivation of making failure), but that would also mean that nothing virtually new could be experienced. The room for the novel would vanish and that would be deadly for creativity.

‘Aheadness’ considers the unpredictable and incorporates uncertainty as a possible option that can at any time become a player in the mental predictive games. The implicit knowledge that an action may fail, that a decision may turn out to be wrong, and the ambitioned proven as futile is always there within the horizon of expectations and is a steady companion to anticipation. The competence of ‘aheadness’ thus contains also a kind of implicit knowledge that whatever we do, for reasons we cannot predict, may not be instantiated the way it was originally preconceived in prediction. This implicit knowledge is a kind of wisdom generated from the rich experience of unfulfilled intents and failed expectations.

For instance, if everything were predictable, there would be no games, no sport, or at least no excitement and enjoyment in them, and quite likely no culture in general. There would also be no need for experimenting for we would be able to anticipate failures and correct them on time, and, in such a way, know what is right before having to test it. And for sure there would be no art as we know it. For instance, in the interaction with the creative medium, a painter’s brush meets the canvas and in that process things happen that could not be preconceived in the painter’s mind no matter how clear his or her mental image of the finished product is. The response from the medium provides, then, new input of which there are no corresponding traces in the initial ‘painting in the mind’. It is never a one-way process (as would be the case if our predictions were trustworthy and accurate), but rather an interaction that always surprises with something unexpected. Innovations in general (and per the definition) are not foreseeable and in that sense are not predictable. Also, there is no ready-made error-free improvisation (see Maldonato and Muzii, this issue).

If minimization of error were realizable in an optimal way, life would be mere replica of the guessed — a behavioural scenario that nobody would like to be part of their real lives. Though, on the one hand, we need certainty and stability in order to spend as little energy as possible maintaining the life of the mind, on the other hand, we long for the novel and unexpected, for we are also (as already mentioned above) curious beings who want to be challenged and find within the unpredictable fulfilment and enjoyment. If everything were known in advance, there would also be no room for surprises that

freshen and flavour our lives. Faultless predictability would make life unbearably boring. It can hardly be *the* ideal of the predictive mind.

7. Death and the Robustness of ‘Aheadness’

The only thing that awaits us ahead and is absolutely certain to happen in the future is — death. At the same time, there is hardly anything we mentally manage to ignore so successfully as just this brute fact. Indeed, it is questionable whether there is any other thing we are masters of avoiding, apart from that which we have absolute certainty of — that some day we will not be around any more.

In my understanding, attributed to the vitality of ‘aheadness’ is that it provides us with a way to make sense of the feeling that there is no halt to protention, no way to silence prospection, and that awareness of our mortal existence cannot significantly impact our natural sense of prolonged existence into the future virtually without termination. This attitude, acquired as a sort of embodied existential *know-how*, that creates an illusion that we will be here forever, seems to be stronger than the *know-that* concerning the sobering fact that we are mere earthly passers-by.

This kind of anticipatory drive is genuine and potent enough to dominate the knowledge of the inevitability of dying, of which we are otherwise aware from very early on. The embodied feeling of prolonged existence and unlimited endurance in time beyond the present and far into the future seems to be the kind of mental setting with which we are not only comfortable but which also grants us our sense of stability and security. It seems that ‘aheadness’ with its comforting illusion is capable of resisting the disturbing brute fact of the finiteness of life, which we are so fond of ignoring. It is as if, empowered by ‘aheadness’, one takes the Merleau-Pontyan ‘I can’ to the extreme, unconsciously implying that one *can* what one most certainly *cannot*. The feeling is created that nothing can inhibit ‘aheadness’ and that accordingly there will always be a ‘tomorrow’. That kind of implicit knowing seems to be imprinted as a default modus of mind overpowering even the explicit knowledge that we are mortal. This kind of impulse is so robust that we can hardly consciously impact or alter it. Robustness of this kind grants us the comfort of the illusion that the future is open-ended, and in such a way, makes secure in us the feeling of uninterrupted lasting and persistence.

References

- Bastos, A.M., Usrey, W.M., Adams, R.A., Mangun, G.R., Fries, P. & Friston, K.J. (2012) Canonical microcircuits for predictive coding, *Neuron*, **76**, pp. 695–711.
- Bitbol, M. & Luisi, P.L. (2004) Autopoiesis with or without cognition: Defining life at its edge, *Journal of the Royal Society Interface*, **1**, pp. 99–107.
- Bizzari, V. & Hipolito, I. (2016) Predictive engagement and motor intentionality, *Esercizi Filosofici*, **11**, pp. 86–98.
- Clark, A. (1999) Visual awareness and visuomotor action, in Núñez, R. & Freeman, W. (eds.) *Reclaiming Cognition: The Primacy of Action, Intention and Emotion*, Exeter: Imprint Academic.
- Clark, A. (2008) *Supersizing the Mind: Embodiment, Action, and Cognitive Extension*, Oxford: Oxford University Press.
- Clark, A. (2013) Whatever next? Predictive brains, situated agents, and the future of cognitive science, *Behavioral and Brain Sciences*, **36** (3), pp. 181–204.
- Clark, A. (2016) *Surfing Uncertainty: Prediction, Action, and the Embodied Mind*, Oxford: Oxford University Press.
- Damasio, A. (1994/2000) *Descartes' Error: Emotion, Reason and the Human Brain*, New York: Quill.
- Damasio, A. (2000) *The Feeling of What Happens: Body and Emotion in the Making of Consciousness*, Belmont, CA: Cengage Learning.
- Dennett, D. (1991) *Consciousness Explained*, Boston, MA: Little, Brown and Co.
- Dewey, J. (1896) The reflex arc concept in psychology, *Psychological Review*, **3**, pp. 357–370.
- Dewey, J. (1916a) *Democracy and Education*, New York: Macmillan.
- Dewey, J. (1916b) *Essays in Experimental Logic*, New York: Dover.
- Dreyfus, H.L. (1995) The current relevance of Merleau-Ponty's phenomenology of embodiment, *Synthesis philosophica*, **10** (19–20), pp. 35–50.
- Dreyfus, H.L. (2002) Intelligence without representation — Merleau-Ponty's critique of mental representation: The relevance of phenomenology to scientific explanation, *Phenomenology and the Cognitive Sciences*, **1** (4), pp. 367–383.
- Freeman, W.J. (1999) Consciousness, intentionality, and causality, *Journal of Consciousness Studies*, **6** (11–12), pp. 143–172.
- Freeman, W.J. (2000) *How Brains Make Up Their Minds*, New York: Columbia University Press.
- Friston, K.J. (2009) The free-energy principle: A rough guide to the brain?, *Trends in Cognitive Sciences*, **13** (7), pp. 293–301.
- Friston, K.J. & Ke, S. (2007) Free-energy and the brain, *Synthese*, **159** (3), pp. 417–458.
- Gombrich, E.H. (1960) *Art and Illusion: A Study in Psychology of Pictorial Representation*, Princeton, NJ: Princeton University Press.
- Harkness, D.L. & Keshava, A. (2017) Moving from the what to the how and where — Bayesian models and predictive processing, *Philosophy and Predictive Processing*, **16**, pp. 1–10.
- Hickok, G. (2013) Predictive coding? Yes, but from what source?, *Behavioral and Brain Sciences*, **36** (4), art. 358.
- Hinton, G.E. (2007) Learning multiple layers of representation, *Trends in Cognitive Sciences*, **11** (10), pp. 428–434.
- Hohwy, J. (2013) *The Predictive Mind*, New York: Oxford University Press.

- Huron, D. (this issue) Psychological anticipation: The ITPRA theory, *Journal of Consciousness Studies*, **27** (3–4).
- Jacob, F. (1982) *The Possible and the Actual*, Seattle, WA: University of Washington Press.
- James, W. (1890/1950) *The Principles of Psychology*, 2 vols., New York: Dover.
- Jordan, J.S. (this issue) Wild stories: Science, consciousness, and the anticipatory narratives in which we live, *Journal of Consciousness Studies*, **27** (3–4).
- Kirchhoff, M.D. (2015) Experiential fantasies, prediction and enactive minds, *Journal of Consciousness Studies*, **22** (3–4), pp. 68–92.
- Kirchhoff, M.D. (forthcoming) Predictive processing, perceiving and imagining: Is to perceive to imagine, or something close to it?, *Philosophical Studies*.
- Kogo, N. & Trengove, C. (2015) Is predictive coding theory articulated enough to be testable?, *Frontiers in Computational Neuroscience*, **9**, art. 111.
- Lewis, C.I. (1929) *Mind and the World Order*, New York: Dover.
- Lowe, R. & Ziemke, T. (2011) The feeling of action tendencies: On the emotional regulation of goal-directed behavior, *Frontiers of Psychology*, **2**, art. 346.
- Maldonato, N.M. & Muzii, B. (this issue) Improvisation in action: A neurophenomenological perspective, *Journal of Consciousness Studies*, **27** (3–4).
- Merleau-Pony, M. (1962) *Phenomenology of Perception*, London: Routledge.
- Mullallay, S.L. & Maquire, E.A. (2013) Memory, imagination, and predicting the future: A common brain mechanism?, *The Neuroscientist*, **20** (3).
- Metzinger, T. & Wiese, W. (2017) Vanilla PP for philosophers: A primer on predictive processing, *Philosophy and Predictive Processing*, **1**, pp. 8–25.
- Nancy, J.-L. (2000) *Being Singular Plural*, Stanford, CA: Stanford University Press.
- Nicolis, J.S. & Tsuda, I. (1999) Mathematical description of brain dynamics in perception and action, in Núñez, R. & Freeman, W. (eds.) *Reclaiming Cognition: The Primacy of Action, Intention and Emotion*, Exeter: Imprint Academic.
- Radman, Z. (2012) The background: A tool of potentiality, in Radman, Z. (ed.) *Knowing without Thinking: Mind, Action, Cognition, and the Phenomenon of the Background*, New Directions in Philosophy and Cognitive Science, Basingstoke: Palgrave Macmillan.
- Radman, Z. (2013) The mind hand-made: On displacement of agency, in Radman, Z. (ed.) *The Hand, an Organ of the Mind: What the Manual Tells the Mental*, Cambridge, MA: MIT Press.
- Radman, Z. (2014) ‘Context of commonality’ or why sharing is more than attending, *Synthesis philosophica*, **29** (2), pp. 209–216.
- Radman, Z. (ed.) (2017) *Before Consciousness: In Search of the Fundamentals of Mind*, Exeter: Imprint Academic.
- Rajesh, P.N.R. & Ballard, D.H. (1999) Predictive coding in the visual cortex: A functional interpretation of some extra-classical receptive-field effects, *Nature Neuroscience*, **2**, pp. 79–87.
- Rietveld, E. & Brouwers, A.A. (2017) Optimal grip on affordances in architectural design practices: An ethnography, *Phenomenology and the Cognitive Sciences*, **16** (3), pp. 545–564.
- Rosenfield, I. (1988) *The Invention of Memory: A New View of the Brain*, New York: Basic Books.

- Schacter, D.L., Addis, D.R. & Bruckner, R.L. (2007) Remembering the past to imagine the future: The prospective brain, *Nature Reviews Neuroscience*, **8** (9), pp. 657–661.
- Streeck, J. & Jordan, J.S. (2009a) Communication as a dynamical self-sustaining system: The importance of time-scales and nested context, *Communication Theory*, **19** (4), pp. 445–464.
- Streeck, J. & Jordan, J.S. (2009b) Projection and anticipation in embodied interaction, Special Issue of *Discourse Processes*, **46** (2–3).
- Varela, F. (1999) The specious present: A neurophenomenology of time-consciousness, in Petitot, J., Varela, F., Pachoud, B. & Roy, J.-M. (eds.) *Naturalizing Phenomenology: Issues in Contemporary Phenomenology and Cognitive Science*, Stanford, CA: Stanford University Press.
- Varela, F., Thompson, E. & Rosch, E. (1992) *The Embodied Mind: Cognitive Science and Human Experience*, Cambridge, MA: MIT Press.
- Wilson, T.D. & Gilbert, D.T. (2003) Affective forecasting, *Advances in Experimental Social Psychology*, **35**, pp. 345–411.
- Zhang, M. (2012) *Keep an Eye on Future Feelings: Interpersonal Affective Forecasting and Self-Regulation*, PhD dissertation, Iowa State University, [Online], <https://lib.dr.iastate.edu/cgi/viewcontent.cgi?referer=https://www.google.com/&httpsredir=1&article=3549&context=etd>.