Towards an integrative approach to the study of awareness
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Intentionality and pre-reflective consciousness

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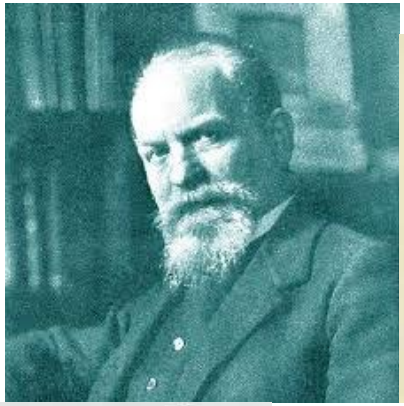
- You are sitting there …
- Three questions:
  - Did I have to tell you that or did you already have some sense that …?
  - After I told you, did you have to check in order to confirm whether I was right?
  - How is it possible that you were able to understood my statement, or this question?
    - ? – English
    - ? – Conscious
    - ? – what must consciousness be like …

Outline

- Phenomenology
- Intentionality
- Reflective vs pre- (or non-) reflective consciousness
- Temporal structure of consciousness
- The minimal self

Phenomenology

- The phenomenal aspect of consciousness: the "what it is like" to to taste or to see or to feel something. Qualia.
- A philosophical approach to the study of consciousness.
  - Husserl
  - Gurwitsch
  - Merleau-Ponty
  - Sartre

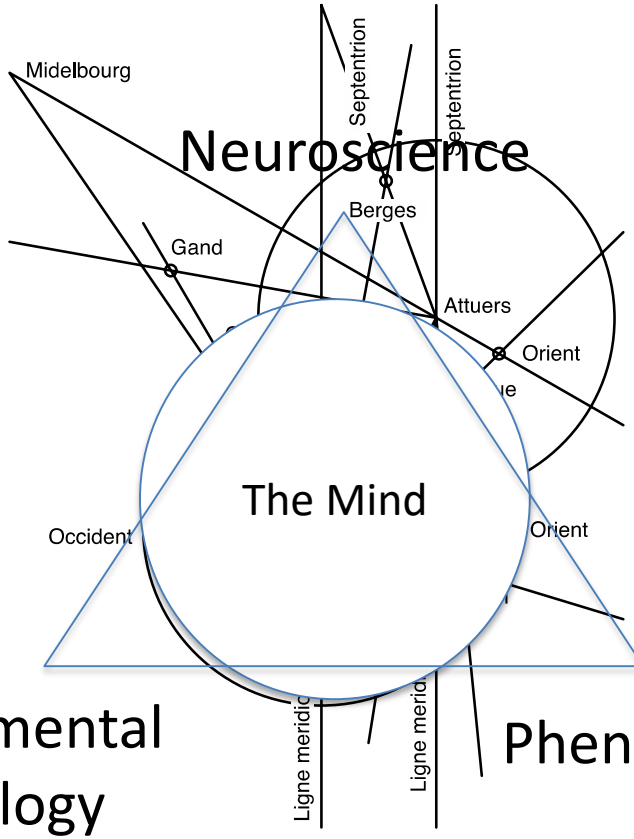



Phenomenology vs naturalism

- 19th-century context of positivism/scientism/ psychologism: complete explanations of consciousness are ultimately reducible to psychology and/or biology and thence to physics.
- Continuing (neuro) reductionism:
  - Francis Crick (1995): *you* are nothing but a pack of neurons
  - Thomas Metzinger (2004): the self is nothing more than a self-model generated by the brain
  - Goldman (2012): there's nothing more to embodiment than a set of B-formatted representations in the brain

- Phenomenology is anti-scientistic, not anti-science.
- Husserl's concern about the epistemological (transcendental) foundations of science.
- Phenomenological approaches to psychology.
  - Merleau-Ponty: a mix of neuroscience, psychology and phenomenology
  - Gurwitsch: phenomenology and Gestalt psychology
  - "Naturalizing phenomenology" -- a more recent attempt to integrate phenomenology with cognitive science (e.g., Varela's neurophenomenology)

- Triangulation:



Neuroscience

The Mind

Experimental Psychology

Phenomenology

Gemma Frisius's 1533 diagram – triangulation in surveying and navigation.

ADD: anthropology, developmental and social psychology, etc.

Owen Flanagan. (1992). *Consciousness Reconsidered*. Cambridge, MA: MIT Press.

- This is easier said than done since
  - each science comes with its own set of assumptions
  - there is a division of labor in science that tends to resist interdisciplinarity
  - experimental research requires controls, and
  - there are questions about how to correlate different kinds of data
- Not insurmountable problems
- A non-reductionist cognitive science

Intentionality

- Phenomenology attempts to identify the invariant characteristics and structures of consciousness.
  - **Phenomenality**: there is something it is like to be conscious.
  - **Intentionality**: to be conscious is to be conscious *of something* – directionality, "aboutness"
    - Brentano, Husserl
  - **Self-structure**: consciousness always involves some form of self-consciousness

Intentionality

I am conscious of something.

Ego or Self

Perceive
Remember
Imagine
Judge
Desire
Believe
Love
Hate …

Intentional object

Intentionality

consciousness of something.

Perceive
Remember
Imagine
…

Noetic aspect
(cognitive state)

NOEMATIC ASPECT

Intentional object

(Brentano)

West Coast Interpretation

Føllesdal [Frege]: Meaning (*Sinn*) vs Reference (*Bedeutung* = intentional object)
Noema = propositional meaning [representation]

East Coast Interpretation

Gurwitsch: related to the perspectival aspects that we experience in perception. – how the object appears

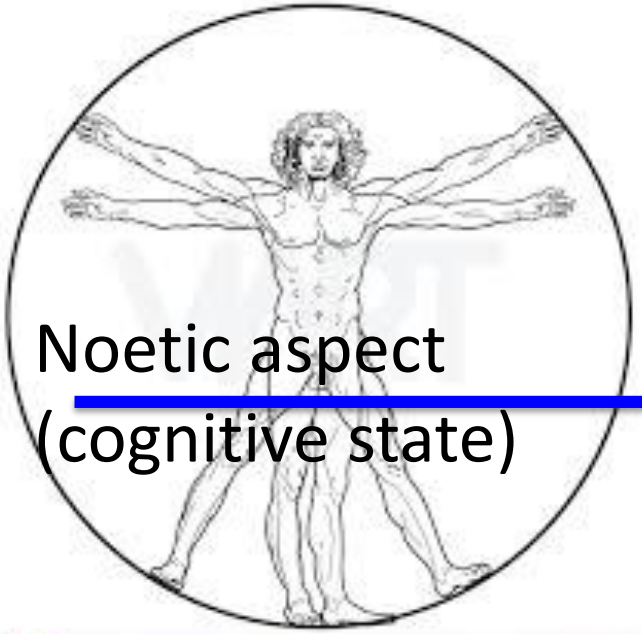
Memphis interpretation

Noema: Greek for 'that which is thought'

Intentionality

consciousness of something.

Prenoetic effects
(embodied/situated)



Noetic aspect
(cognitive state)

NOEMATIC ASPECT

AFFORDANCE

Intentional object

Spatial perspective
Affective aspects
Practical interests

Study questions

- Does an explanation of consciousness necessarily have to be representational?
- E.g., is a percept a representation?
- If we think of perception, for example, in terms of affordances – perceiving things in action-oriented or pragmatic ways – does that change the way that we think about the brain?

Reflective and pre-reflective consciousness

- The intentionality of consciousness is found in the first-order level of experience – before there is any reflective introspection.
- The subject can always take up a certain perspective that is one order removed from immediate experience.
  - I hate that apple tree; I can then reflect on this hating -- become explicitly aware that I am hating rather than liking or planning, etc.
- Maybe the noetic aspect is complex: I perceive the tree, and hate it, and I'm planning to do something about the tree – I can start to reflect about all of this, and that adds another layer to consciousness.
- The intentional object of reflection in such cases = the noetic aspects of the first-order consciousness. My reflection is about my seeing, hating, thinking or planning.

Pre-reflective self-awareness (PRESA)

- Even without making this reflective move, however, I am pre-reflectively aware of what I am doing.
- PRESA is pre-reflective in the sense that

1. it is an awareness we have before we do any reflecting on our experience;
2. it is an implicit and first-order awareness rather than an explicit or higher-order form of self-consciousness

Sartre:

[E]very positional consciousness of an object is at the same time a non-positional consciousness of itself. If I count the cigarettes in my cigarette case, I have the impression of disclosing an objective property of this collection of cigarettes: *they are a dozen*. This property appears to my consciousness as a property existing in the world. It is very possible that I have no positional consciousness of counting them. Then I do not know myself as counting. Yet … I have a non-thetic [non-positional, non-observational] consciousness of my adding activity. If anyone questioned me, indeed, if anyone should ask, "What are you doing there?" I should reply at once, "I am counting." (1943, 19–20).

Goldman, an analytic philosopher, agrees:

[Consider] the case of thinking about *x* or attending to *x*. In the process of thinking about *x* there is already an implicit awareness that one is thinking about *x*. There is no need for reflection here, for taking a step back from thinking about *x* in order to examine it…When we are thinking about *x*, the mind is focused on *x*, not on our thinking of *x*. Nevertheless, the process of thinking about *x* carries with it a non-reflective self-awareness (Goldman 1970, 96).

- The claim: First-person experience involves an immediate and non-observational access to myself, which entails a (minimal) form of self-consciousness.
  - Did I have to tell you that or did you already have some sense that you were sitting listening to me speak?
  - After I told you, did you have to check in order to confirm whether I was right?
- PRESA can be ascribed to all creatures that are conscious, including various non-human animals.
- PRESA accounts for the fact that experiences have a quality of *mineness* or *for-me-ness*, the fact that it is *I* who am having these experiences.
  - Wm James: all consciousness is personal

- But not all philosophers agree, and indeed can be skeptical about the concept of pre-reflective self-awareness.
  - The fridge light problem
  - Self-awareness is non-existent as we are engaged in action or immersed in a project (early Sartre; Dreyfus)
- Western psychology also tends to define self-consciousness in terms of explicit consciousness of the self as object, e.g., mirror self-recognition, conceptual or narrative versions of self-consciousness.

- DaSilveira et al (2015), based on data from a set of self-report questionnaires propose "[pre-reflective] self-consciousness can be associated to a present moment of self-experience in which one is aware of their experience without any reflexive judgment attached, which is usually investigated in mindfulness studies."

frontiers in Psychology

Self-consciousness concept and assessment in self-report measures

*Amanda DaSilveira[1], Mariane L. DeSouza[2] and William B. Gomes[1]**

First problem: how do we establish that in fact PRESA genuinely exists?

- PRESA is defined in such a way that it cannot be discovered according to phenomenological methods – i.e. precisely those that require the subject to reflect upon her experience.
- So, how precisely can one show that there is such a thing?

- One way to deal with this is to think of the issue in terms of bodily experience.
- **Gibson: Perception is ecological** – when we are aware of the an object, we are simultaneously aware of certain aspects of our own bodily behavior.
  - Egocentric spatial frame of reference: the perceived X is in front of me, off to my right, or left, above me or below me – an implicit reference in perception to where I am, or where my body is relative to X.
  - Kinaesthetic information about my movement;
  - Proprioceptive information about my posture – e.g., whether I am sitting or standing.

- Proprioception – measurable as information.
- Proprioceptive awareness?
- The claim is that I am proprioceptively/kinaesthetically aware of certain (limited) aspects of my posture and my movement.
  - A recessive awareness -- I can respond quickly and easily to questions at a certain pragmatic level.
  - E.g., Did you just reach and grab that pencil?
  - Not a matter of inference – I don't consult the evidence for whether I did or didn't reach for the pencil – I just have an intuitive sense that I did.
  - This doesn't mean that I have all the details about the movement; or that my pre-reflective awareness is about my body, *per se*.

- In what detail?

  Up to this moment [...] I have not been paying attention to the feeling of the chair against my back, the tightness of my shoes […] Nonetheless, all of these phenomena are part of my conscious awareness" (Searle, 1992, pp. 137 - 138).
- This is not clear. But if you ask me whether I have been sitting or standing, my answer is based on a sure sense of what I have been doing.
- Likewise, reaching and grasping.
  - No details of the grasp (non-conscious processes)
  - But good sense that I have intentionally reached to grab the cup (pre-reflective awareness)

- Distinguish between my ability to provide such answers and the question of whether I can reasonably establish that there is such a thing as pre-reflective self-awareness.
- My ability to provide answers about my posture/movement/action, based on ecological information can be considered evidence in **an argument to best explanation** in support of the notion of pre-reflective self-awareness.
- Phenomenologists not only appeal to experience; they also provide such arguments.

- Zahavi (1999) writes of a problem one might face at least three times a day:

I wish to begin to eat, and so I pick up the fork. But how can I do that? In order to pick up the fork, I need to know its position in relation to myself. That is, my perception of the object must contain some information about myself, otherwise I would not be able to act on it. (1999, p. 92)

- I may have to go looking for a hammer, but I don't have to go looking for where my hand is.
  - This is not reflective knowledge or constant perceptual monitoring of where my hand is.

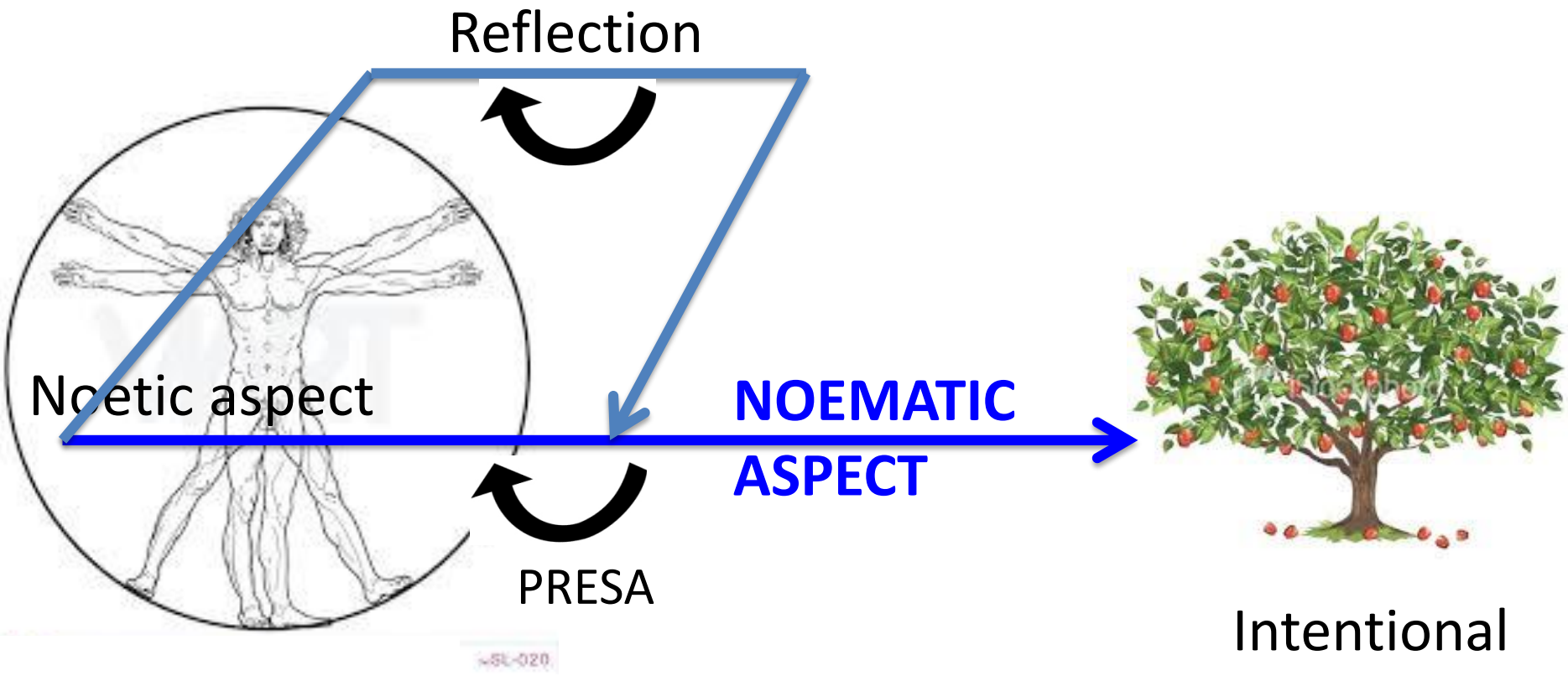
- PRESA is non-observational
  - It is part of the intentional structure of consciousness and is intentional in that sense
  - It does not take the body as an object; nor does it posit the mind or self as an entity
- Vs. Brentano

  In the same mental phenomenon in which the sound is present to our minds we simultaneously apprehend the mental phenomenon itself. What is more, we apprehend it in accordance with its dual nature insofar as it has the sound as content within it, and insofar **as it has itself as content at the same time**. We can say that the sound is the *primary object* of the *act* of hearing, and that the act of hearing itself is the *secondary object* (Brentano 1874

- Husserl and other phenomenologists disagree with Brentano on this: my awareness of my experience is not an awareness of it as an object.
- My awareness is non-objectifying in the sense that I do not occupy the position or perspective of a spectator or in(tro)spector who attends to this experience in a thematic way.
- That a psychological state is experienced, "and is in this sense conscious, does not and cannot mean that this is the object of an act of consciousness, in the sense that a perception, a presentation or a judgment is directed upon it" (Husserl 1984)

Intentionality

consciousness of something.

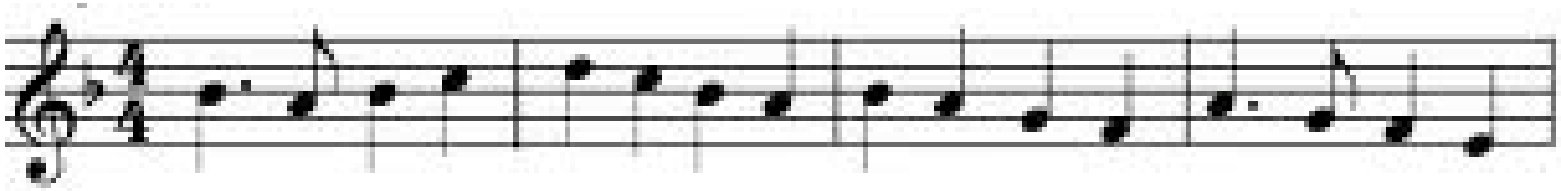


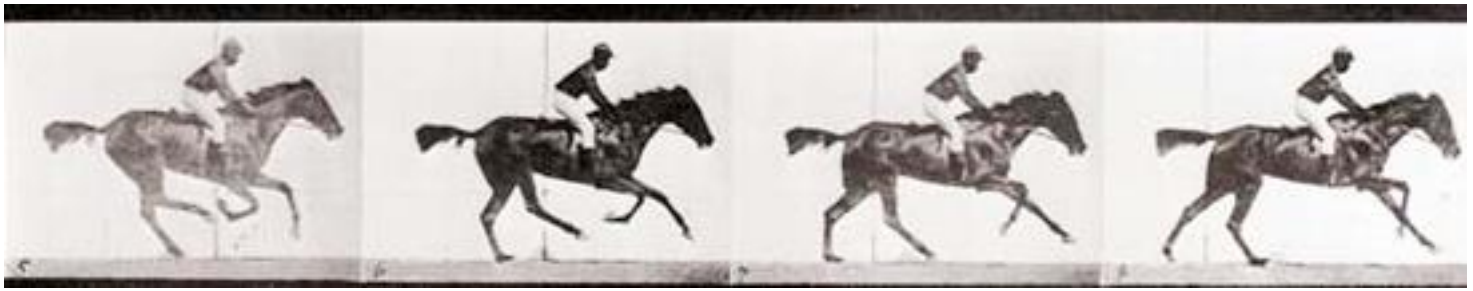
Temporal structure of consciousness

- What is the mechanism – e.g., what sort of (neuro)scientific account could we give of PRESA?
- First, more phenomenology that leads us towards a sub-personal account.
- What must consciousness be like (i.e., how must it be structured) if PRESA is possible?
- Here the phenomenological analysis of the temporal structure of consciousness (time-consciousness) is relevant.

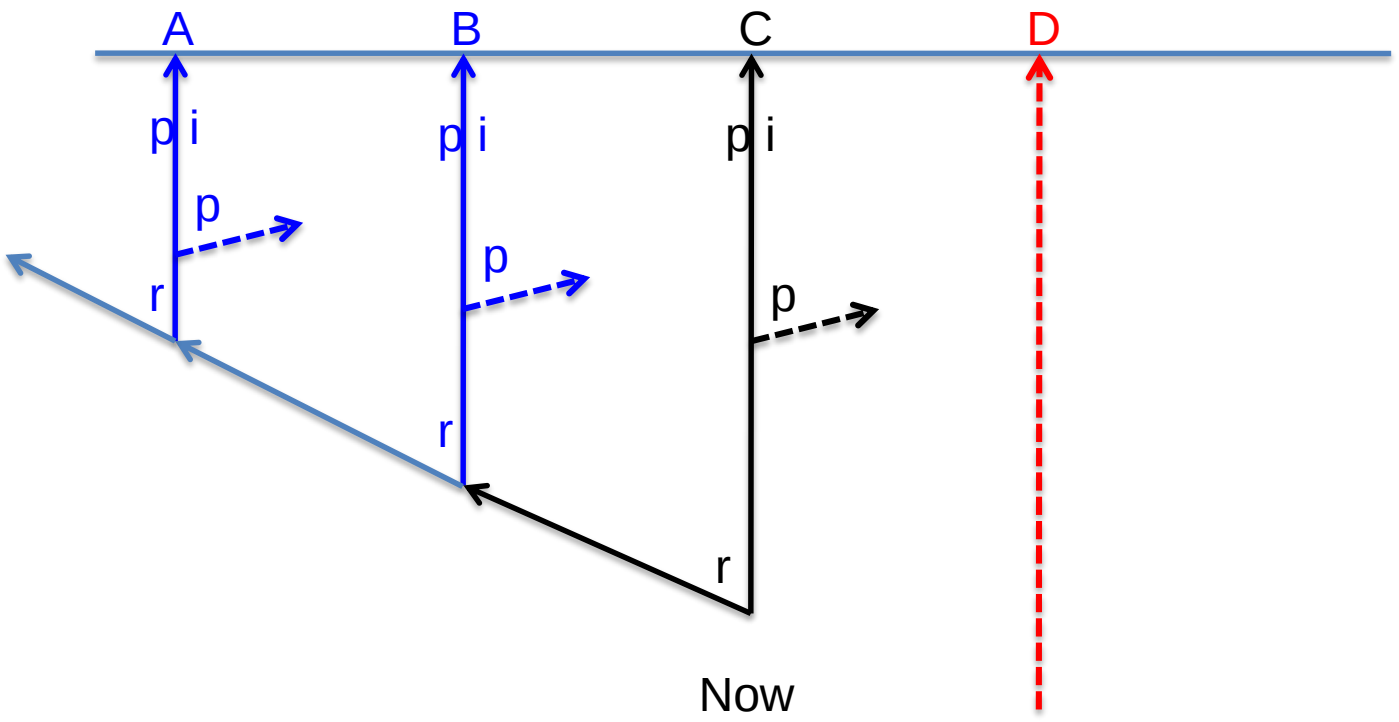
Husserl's phenomenology of time consciousness

- Primal impression
- Retention
- Protention





Transverse intentionality -- Unity of the object



Logitudinal intentionality
Unity of consciousness
PRESA

- Action can be characterized as having the same intrinsic temporal structure as consciousness
- The body schema dynamically organizes sensory-motor feedback in such a way that the final sensation of position is 'charged with a relation to something that has happened before' (Head 1920: 606).
- At each successive instant of a movement, the preceding instant is not lost sight of. It is, as it were, dovetailed into the present .... [Movement draws] together, on the basis of one's present position, the succession of previous positions, which envelop each other (Merleau-Ponty 1962: 140).

- Anticipatory or prospective processes are pervasive in low-level sensorimotor actions.

  - hand-mouth coordination in infants -- In infants younger than 3 months mouth opening anticipates fingers
  - low-level sensorimotor actions, like visual tracking, involve moment-to-moment anticipations concerning target trajectory
  - gaze anticipates the rotation of our body when we turn a corner (Berthoz 2000: 126).
  - Postural anticipation to maintain balance while reaching (Babinski 1899).

- The grasp of my reaching hand tacitly anticipates the shape of the object to be grasped, and does so according to the specific intentional action involved (Jeannerod 2001; Wolpert et al. 1995).
- Anticipation is 'an essential characteristic' of motor functioning, and this underpins our capacity to reorganize our actions in line with events that are yet to happen (Berthoz 2000: 25).
- Since these prospective processes are present even in infants, the 'conclusion that [anticipatory processes] are immanent in virtually everything we think or do seems inescapable' (Haith 1993: 237).

Study question

- What would experience be like if consciousness did not have this temporal structure?
- Consider the case of motion agnosia or motion blindness (following damage in the medial temporal cortex, visual perception of form and colour may be preserved, but perception of motion is disrupted). (Schenk and Zihl 1997; Zihl et al. 1983).
  - This is just in the visual modality – what if this generalized to consciousness itself.

Three timescales (Pöppel 1988, 1994; Varela 1999; van Gelder 1996; Thompson 2007)

- the **elementary scale** (varying between 10-100 milliseconds)

Neuronal events

- the **integration scale** (varying from 0.5 to 3 seconds)

Phase-locking of neural assemblies

- the **narrative scale** involving episodic memory (longer term)

Timescale of the specious present -- experienced living present: a fully constituted, normal cognitive operation; motorically basic action, e.g., reaching, grasping.

- On the elementary timescale sensory information that registers in neuronal processes that occur within some short temporal window (e.g., 30 msec) are experienced (on the integrative timescale) as occurring simultaneously.
  - E.g., discrepancies between visual and auditory processing – yet we don't see the dancer move prior to hearing the relevant musical note.
- Retention involves a dynamic temporal binding as information enters integrative timescale.
- Modulated by intentional factors – e.g. intentional binding in the case of action (Haggard)

Proposed models linking phenomenology & neuroscience

1. **Varela (1999)** – dynamic model of oscillatory synchrony

- The phase locking of neuronal assemblies generates, at the integration timescale, a dynamically unstable synchronization which constantly and successively gives rise to new assemblies.
- Varela suggests that these neural events underwrite both the unity of now phase of consciousness, and the continuous flow.
- In the now phase (a specious present) we experience certain elementary units as simultaneous that are not strictly simultaneous – a kind of retention of the past in the present.
- It's not clear how this model would deal with protention.

2. Grush (2006) – perceptual and motor forward-models that estimate the trajectory of movement

- The system maintains, at each moment, an estimate of the trajectory of its own processes over a short temporal interval (100 msecs of past; 100 msecs of anticipated future).

"the human perceptual system is maintaining at any moment a representation not just of the state of the perceived domain at that instant, but rather of a temporal interval about 100 ms of the domain's [just past] behavior."

  - Evidence: we can perceive motion.
  - Apparent motion -- a sequence of two flashes in close spatial and temporal proximity is seen as a single moving dot
  - Cutaneous rabbit
  - Perceived (representational) momentum.

- Grush provides a detailed computational model of this kind of process.

"By combining filtering [PI], smoothing [R] and prediction [P], these mechanisms are able to produce, at any time t, an estimate of the behavior of the represented domain over any [brief] interval" (Grush 2008).

- Although Grush offers this as a neural implementation of Husserl's model of temporal structure, it doesn't explain temporal flow or the continuity implied in the model.
- Also, a few hundred msecs seems too short for the magnitude required in movement and music perception.

3. Hohwy, Patton, Palmer (2015) – predictive coding

- The sense of temporal flow in conscious perception stems from probabilistic inference involving an implicit knowledge that its going to change –distrust of present
- A Bayesian predictive coding model of this sense of subjective flow: "The window of the specious present moves forward because the system expects change and therefore down regulates the current input."

- By appealing to a cortical hierarchy where higher levels represent patterns in the input that occur over longer time scales, this model is also meant to explain variations in the subjective sense of flow –
  - how time seems to speed up or slow down depending on what we are doing
- Predictions of change happen at different levels of the hierarchy and this is governed by some degree of equilibrium between the ongoing dynamics of incoming sensory input, and top-down predictions.
- The degree of hierarchical engagement relate to global-local processing differences, and again to differences in the sense of temporal flow – modulating in some way expectation of change (degrees of distrusting or trusting the present)

Study question

- Assuming that a phenomenology of the temporality of consciousness involves the *retention-primal impression-protention* flow structure, how can the neuroscience of that structure be best modeled?

The minimal self

- Pre-reflective self-awareness and the intrinsic temporal structure of consciousness suggest that we have a basic sense of self built into experience.
- To have a self-experience does not entail the apprehension of a special self-object; it does not entail the existence of an experience of a self alongside other experiences but different from them.
- To be aware of one*self* is not an awareness of a pure self that exists separately from the stream of experience.

- Hume, *A Treatise of Human Nature* (1739).

"For my part, when I enter most intimately into what I call myself, I always stumble on some particular perception or other, of heat or cold, light or shade, love or hatred, pain or pleasure. I never can catch myself at any time without a perception, and never can observe any thing but the perception…. If any one, upon serious and unprejudic'd reflection thinks he has a different notion of himself, I must confess I can reason no longer with him…. He may, perhaps, perceive something simple and continu'd, which he calls himself; tho' I am certain there is no such principle in me."

- Hume overlooks something.
- It turns out that he was looking only among his *own* experiences, and seemingly recognized them as his own, and could do so only on the basis of that immediate pre-reflective self-awareness that he seemed to miss.

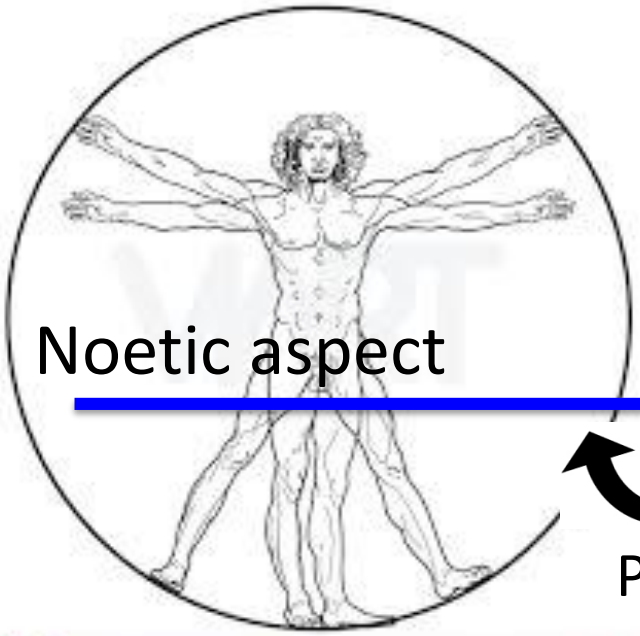
  "[F]rom the fact that the self is not an object of experience it does not follow that it is non-experiential" (C. O. Evans 1970, 145).

Minimal self (on the integrative time scale) – the sense of self that we get from PRESA

1. First-person perspective
2. Sense of ownership (mineness) – that these experiences are mine
3. Sense of agency – in the case of intentional action, that I am the one who initiates/controls it

Intentionality

I am conscious of something.



Noetic aspect

NOEMATIC ASPECT

PRESA

Intentional object

IEM

- Wittgenstein (1958) distinguished use of the first-person pronoun *as subject* from its use *as object*.
  - **As subject:** 'I have a toothache'. It would be nonsensical to say 'Someone has a toothache, is it I?'
  - **As object:** [Looking in the mirror] 'I have a sunburn'. It's possible that I mistake someone else's sunburned arm for my own.
- Shoemaker (1968): immunity to error through misidentification (IEM).

- IEM because, “as subject” we are not involved in an identification process – we are not making a judgment of identity (Shoemaker)
- IEM seemingly depends on **mode of access** or “ways of gaining knowledge”
  - non-observational introspection vs observational perception (Shoemaker).
  - “It has to do … with the idiosyncrasies of our ways of finding out about psychological states” (Campbell 1999)
  - Proprioception (G. Evans) -- I can never have a proprioceptive sense of a body other than my own.
- But IEM may be a **more pervasive aspect** of experience – tied to the very structure of pre-reflective self-awareness.

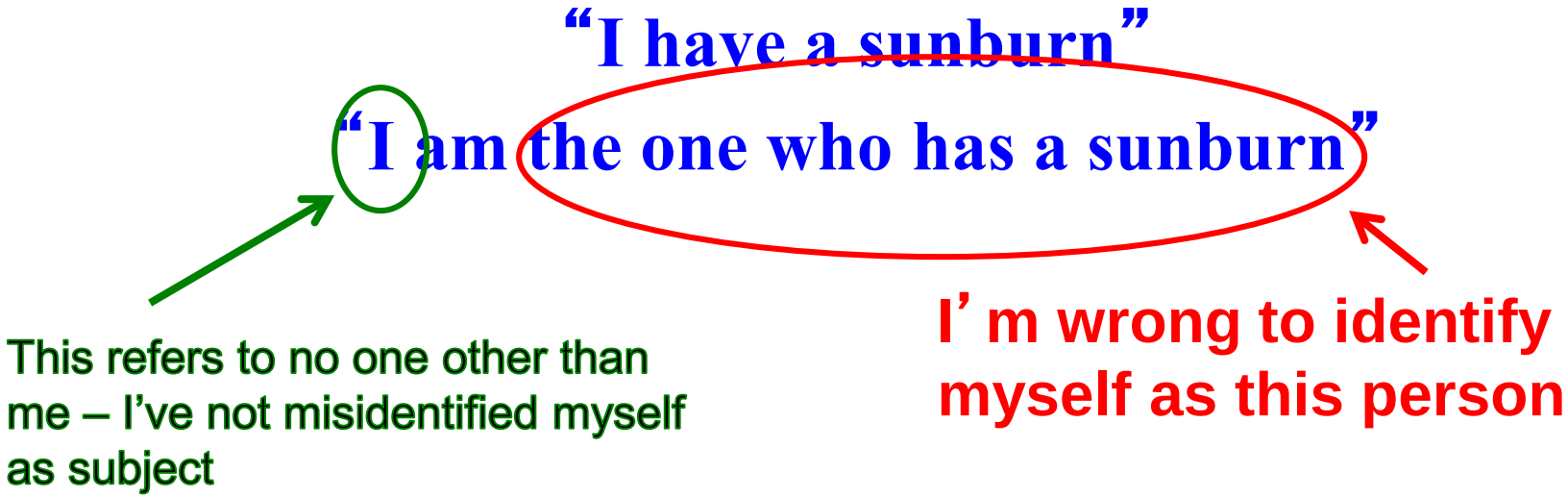
- On the "mode of access" view IEM may be contingent or *de facto*, but not guararanteed – it can fail in cases where sense of agency or sense of ownership is disrupted (e.g., schizophrenic delusions of control, rubber hand illusion).

"In a nutshell, the bad news for philosophers is that self-identification is after all a problem. In the domain of action and intention at least, there is no such thing as immunity to error through misidentification, whether for the self as object (sense of ownership) or for the self as agent (sense of agency). The mechanisms involved in self- and other-attribution may be reasonably reliable in normal circumstances, but they are not infallible" (Pacherie & Jeannerod 2004).

- But IEM may be a stronger principle than that.
- If the way that consciousness is structured is such that it is pre-reflectively self-aware, then the first-person perspective (the fact that it is I who am experiencing whatever I experience – and I can only ever experience in that way) does seem to be IEM.
- When the schizophrenic complains that someone else is controlling his thought or action, he is confirming that this is happening to him – he is the one experiencing it.
- When during the RHI I experience the rubber hand as part of my body, it is I who am experiencing it, even if I am making a mistake about the hand.

- All of my experience has this pre-reflective structure, even when I am reflectively aware of myself *as object* – even as I look at my reflection in Wittgenstein's mirror and misidentify myself, I am not wrong about who it is – on the subject side – that I am misidentifying – I am misidentifying myself.
- When I look in the mirror and say 'I have a sunburn', I may be wrong about who has a sunburn, but the word 'I' refers to no one other than myself **– and that's precisely why my judgment is mistaken.**

- Even if I am wrong about who is sunburned as I look in the mirror, I'm not wrong about *who* it is to whom I attribute the sunburn; I attribute it to myself, and for that very reason I make a mistake.
- But this is a mistake about who has the sunburn; it is not a mistake about who is making the (incorrect) attribution, or who is having the experience of looking in the mirror.



- I can identify or misidentify myself-as-object, only because I can never misidentify myself-as-subject, and in any case where I do identify or misidentify myself-as-object, I am always acting and experiencing as-subject.

Study questions

- Is there any pathology or experiment that preserves consciousness but destroys PRESA?
- If so, would that challenge IEM?

A unique challenge to IEM

- A case that involves anonymous vision
- Zahn, Talazko and Ebert (2008) describe this disorder as a selective loss of the sense of self-ownership specifically for visual perception of objects.
- Notably, the subject (DP, a 23 year old male) has an intact sense of ownership in the proprioceptive domain and an intact sense of self-agency.
- DP's initial complaint was that he had "double visions," the onset of which followed a long overseas flight after a holiday during which he engaged in ocean diving.
- Examination revealed that he did not literally have double vision, i.e., he did not see objects in double. Rather he described a two-step process involved in seeing.

When looking at or concentrating on a new visual object, he is able to see the object as a single object, but the way he perceived had markedly changed in a way which he had never experienced before. It appeared to him that he was able to see everything normally but that he did not immediately recognize that he was the one who perceives and that he needed a second step to become aware that he himself was the one who perceives the object. (Zahn et al. 2008, p. 398)

- DP reports no problems with action; his actions feel no different from normal and he is immediately aware that he is acting. SA for actions remains intact, and he needs no second step to identify himself as the agent of his actions.
- Perception of other people and their movements are normal, as are his social interactions and communications.
- He shows no schizophrenic signs and has never manifested psychiatric or medical conditions.
- Standard neuropsychological testing showed nothing abnormal; the researchers excluded attention and executive deficits.
- Imaging studies showed abnormal (hypometabolic) functioning in inferior temporal, parieto-occipital and precentral regions.

- Zahn et al. claim that this case challenges IEM because DP's access to his first-person experience is not direct or non-observational.
- It seems that DP is sensibly able to ask the Wittgensteinian nonsensical question: "Someone is seeing this object, is it I?"
- As far as we know, however, in every case where the correct answer is 'yes', DP answers that question in the affirmative. Even if his sense of ownership for vision depends on reflective introspection and he actually has to make a judgment about the identity of the seeing subject, he so far has not made an error of misidentification.

- The fact that he has to make a judgment at all, however, is an issue. As Shoemaker explains, when we are required to make a judgment of identification we implicitly or explicitly appeal to criteria.
- One question in DP's case is what criteria he uses to make the correct judgment. That is, why does he answer the question in the affirmative? What aspects of his experience does he consider in order to answer the question? This is not clear from Zahn et al.'s report; and it may not be clear to DP.
- Zahn et al. focus on the question of the sense of ownership – but if IEM is more basically tied to the first-person perspective …

- One might argue that when DP sees an object the seeing is not anchored in the first-person perspective. But this is *not* at all clear.
- It is not clear that DP's vision is a free-floating, non-positional seeing. If DP's vision of the object is seemingly the view of no one, this does not mean that it is a view from nowhere
- It is of necessity (i.e., it is part of the essence of vision to be) perspectivally situated, and this may be the very thing that allows DP to *judge* it to be *his* view.
- We could predict, as Shoemaker would predict regarding DP's introspection, that DP will never make a mistake in this regard since it is never the case that he finds himself having someone else's visual experience.

- DP doesn't pick out a selective set of visual object perceptions among a large variety of such experiences that belong perhaps to others or perhaps to himself.
- Standing next to me, he doesn't pick out my visual experience as a possible candidate for his own. He, quite normally, like the rest of us, finds only his own visual experiences available, characterized already and without exception as experiences from a first-person perspective.
- That should be the end of the story since we do not normally initiate a reflection to ascertain whether such experiences are our own. What's different in DP's case -- he does initiate a reflection in which he attempts to identify such experiences as his own.

- If it's not a problem with first-person perspective, however, what explains DP's experience? One possibility is that the problem is on the level of reflective introspection or report.
- Marcel's experiments.
- This would be a problem with mode of access, but not with first-person perspective, which remains intact, and which anchors DP's sense of self-identity and is, by all measures, still IEM.