

Time-Consciousness and the Present

Keith Wilson

University of Warwick
Work in Progress Seminar

Overview

1. The problem of time-consciousness
2. Dainton's overlap model
3. Varela's dynamical systems interpretation of Husserl's phenomenology of time-consciousness
4. Consequences for our understanding of temporal phenomena

Part I: The Problem

The phenomenology of time-consciousness

- Four temporal phenomena:
 1. Qualitative change: from *Fa* to $\sim Fa$
 2. Temporal change: from *future* to *present* to *past*
 3. Succession: *a* occurred *before b* or *after c*
 4. Duration: perception of objects as 'continuing on'
- ...Temporal passage?

The durationless present

1. *Question:* does the present have duration, or is it instantaneous?
2. If the present has duration, parts of it must lie in the past and/or future
3. On pain of contradiction, nothing can be both *present* and *past*, or *present* and *future*
4. *Conclusion:* the present must be durationless

The problem

1. *Assumption:* We only ever experience what is occurring at the present moment.
2. The metaphysical present is durationless, and so cannot incorporate succession, duration or change.
3. *Conclusion:* the direct perception of temporal phenomena requires experience to involve the awareness of an extended period of time.

Time and experience

'...we never could have any knowledge except that of the present instant. The moment each of our sensations ceased it would be gone for ever; and we should be as if we had never been. ... We should be wholly incapable of acquiring experience. ... Even if our ideas were associated in trains, but only as they are in imagination, we should still be without the capacity of acquiring knowledge. One idea, upon this supposition, would follow another. But that would be all. Each of our successive states of consciousness, the moment it ceased, would be gone forever. Each of those momentary states would be our whole being.'

James Mill (1829: vol. I, p. 319)

The specious present

'In short, the practically cognized present is no knife-edge, but a saddle-back, with a certain breadth of its own on which we sit perched, and from which we look in two directions into time. The unit of composition our perception of time is a duration, with a bow and a stern, as it were – a rearward- and a forward-looking end.'

William James (1890: 609)

Formal principles

Principle of Contemporaneous Awareness:

(PCA) A sequence or succession is experienced only when an entire temporal spread is apprehended by a single act of consciousness.

Not to be confused with the '*Lotzean Assumption*':

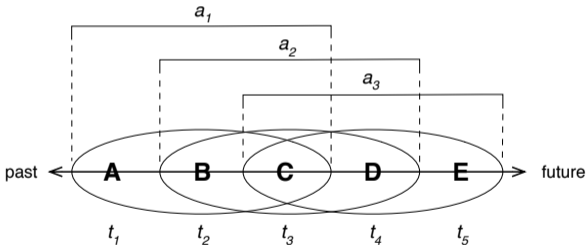
(LA) The perception of succession requires a momentary and indivisible, and therefore durationless act of consciousness.

Part 2: The Overlap Model

Dainton's overlap model

1. Obeys the *Principle of Presentational Concurrence*: (PPC) 'The duration of a content being presented is concurrent with the duration of the act of presenting it.' (Miller 1984: 107)
2. Rejects (LA); acts of awareness are extended through objective time
3. Rejects the awareness–content distinction; representational contents are inherently conscious and exhibit phenomenal 'flow'

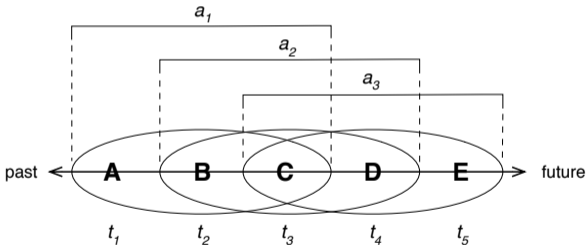
Overlapping acts of awareness



The problem of repeated contents

- Momentary events are experienced as having negligible duration ($<0.5s$)
- Events are experienced across multiple acts of awareness, each having the duration of the 'specious present' ($\sim 1.5s$)
- *Problem:* momentary events would be experienced as occurring multiple times, or continuously throughout an extended period (> 1.5 seconds)

Overlapping acts of awareness

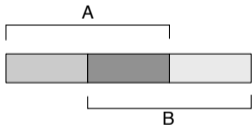


Two types of overlap

Solution: acts of awareness have a temporal structure, and share the same representational contents as numerically identical common parts.

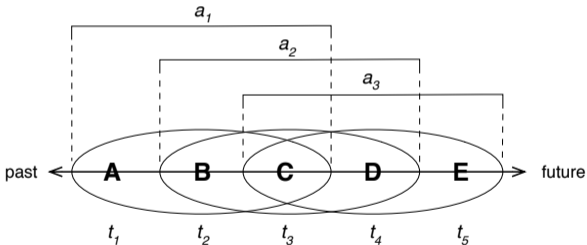


Overlap by
superposition



Overlap by sharing
of common parts

Overlapping acts of awareness



The duration of the specious present

- *Coincidence threshold* (simultaneity):
Vision: 20ms
Touch: 10ms
Hearing: 2–3ms
- *Order threshold* (succession):
30ms for all sensory modalities
- *Dainton's conclusion*: ~30 'specious presents' per second (!)

Problems for the overlap model

1. *Temporal change*: How can numerically the same contents be experienced as past, present and future?
2. *Causal structure*: How can mental acts be causally efficacious if they are extended in objective time?
3. *Theatre of consciousness*: Is it plausible that experience presents events as occurring in strict linear sequence? (Dennett)
4. *Phenomenal flow*: Why do we experience time as passing?

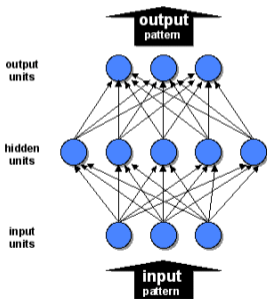
The Cartesian Theatre objection

- The notion that experience forms a single orderly 'stream of consciousness' is implausible and illusory
- Dainton's overlap model presupposes the existence of a kind of 'Cartesian Theatre'
- The brain creates multiple competing drafts of experience, which are only unified as required; e.g. in reflection or memory
- Time need not be represented temporally (content-vehicle distinction)

Part 3: A Dynamical Systems Account

Connectionism and dynamical systems

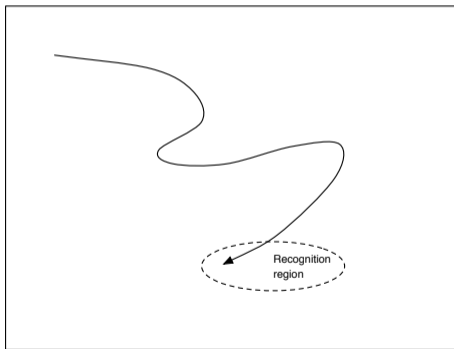
- *Connectionism*: an information processing paradigm based upon a network of interconnected nodes.
- *Dynamical systems theory*: studies how closely interrelated quantities evolve over time. (van Gelder 1999: 252)



Dynamical connectionist systems

- Utilise the temporal properties of the network for information processing
- Network state is highly unstable, cycling around a number of attractor regions
- Non-linear; small changes in state can results in disproportionately large effects

Dynamical phase space



Example: Lexin

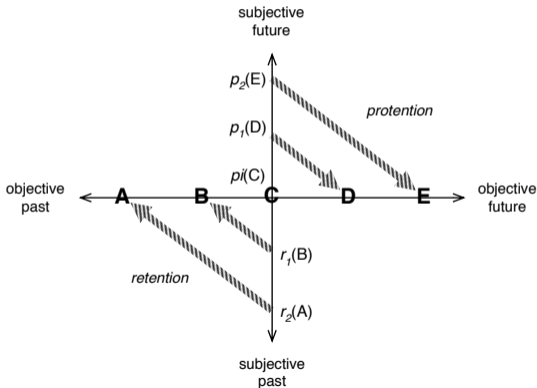
- A connectionist network that can recognise musical melodies (Anderson & Port)
- The note B in the melody 'A-B-C' yields a different trajectory through phase space than the same note in 'C-B-A'
- The present state of the system encodes information about its past and future states, and thereby about past and future *events*

Retention and protention

Husserl explains the direct awareness of duration and succession in terms of:

1. *Retention*: the continuing presence in consciousness of intentional relations towards past events and conscious states
2. *Protention*: the 'anticipatory' presence in consciousness of intentional relations towards future events and conscious states

Husserl's transverse model



A dynamical systems interpretation

Varela (1999) and van Gelder (1999) offer the following interpretation:

- *Retention*: Component of the system's current state and trajectory in phase space that are due to past events and states
- *Protention*: Component of the system's current state and trajectory due to its 'anticipation' of future events and states

Conclusion

- Retention and protention are pervasive features of complex dynamical connectionist systems
- They are present at every level and in every subsystem of the network (compatible with Dennett's Multiple Drafts model)
- Succession and duration are experienced directly in the specious present
- The specious present does not exist in objective time, but lies 'perpendicular' to it

Postscript: temporal flow

- Reflective and unreflective consciousness may possess very different temporal structures
- Dynamical time-consciousness explains temporal flow in terms of the inherent instability, or 'flux', of consciousness itself
- The perceived 'flow' of time may be the result of many different cognitive mechanisms combined (perceptual, dynamical, inferential, ...)

Questions