
‘Chaos’

Undecidabilities in the eye of anticipatory
understanding

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The world of the 'client system'

◆ Differentiation of behaviour

– Environment Passive

- » Placid Randomised
- » Placid Clustered
- » Disturbed-reactive

we can do it anywhere

where we do it affects what we can do

we must anticipate the reaction we get to what we do

– Environment Active

- » Turbulent

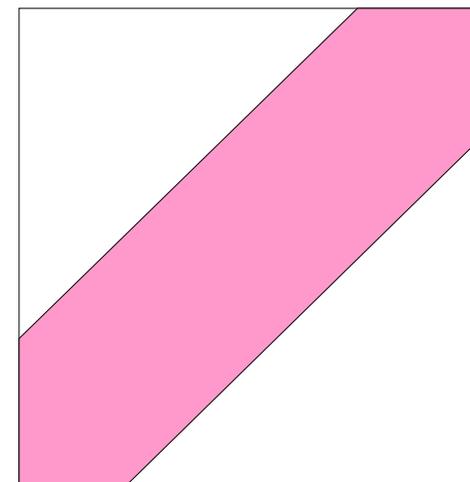
the world has a life of its own, so we must watch how we anticipate

(Causal Texture à la Emery, F.E. and Trist, E.L. (1965) 'The causal texture of organizational environments', *Human Relations*, Vol 18, pp21-32.)

... but who is watching?

- *Viability* depends on sustaining requisite differentiation of behaviour in relation to the ‘world’.
- *Identity* is constituted through the organising processes that integrate the differentiated behaviours.

Integration of
differentiated
behaviours



Differentiation of behaviour

Enterprise Formalisation (Boxer & Cohen 1996)

- ◆ We are seeking to construct
 - Theory of agent *qua* capability
 - » *via* (**1st order**) anticipation of outcome of actions.
 - Theory of agent *qua* supplier
 - » *via* (**2nd order**) anticipation of satisfaction of demands through organisation of processes which it offers.
 - Theory of agent *qua* client
 - » *via* (**3rd order**) anticipation of satisfaction of needs through specifications of behaviours which it seeks to articulate as realisable in time.

“Analysing the lack of demand organisation”. Proceedings of CASYS97

Anticipatory Systems (after Rosen 1987)

◆ An anticipatory system

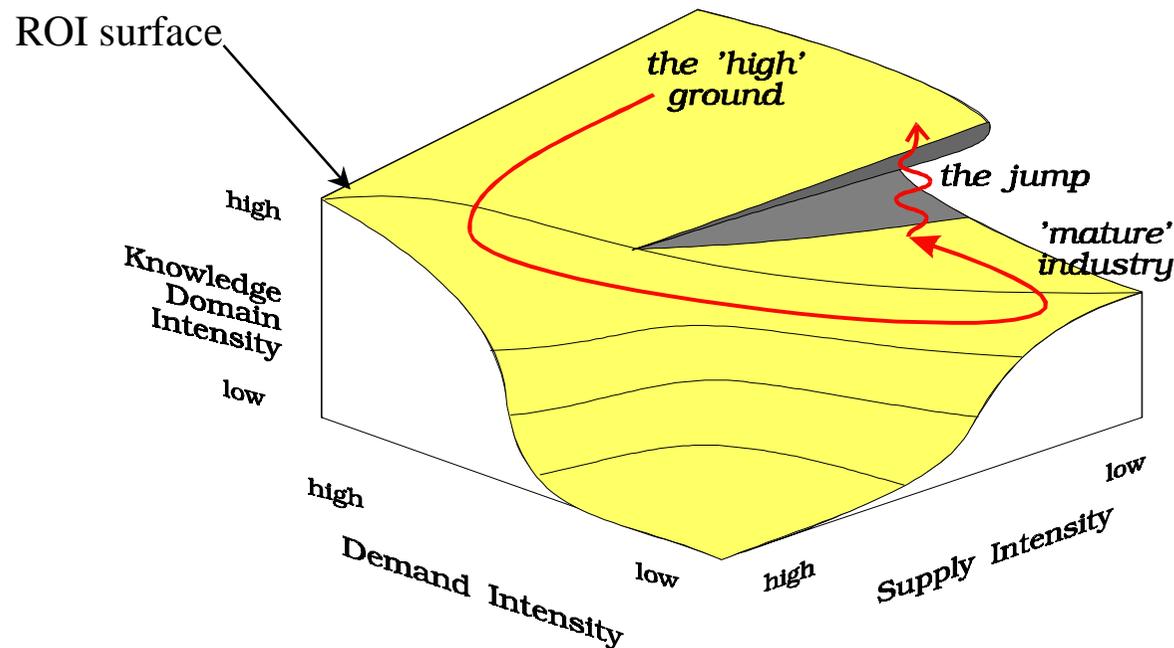
- » includes a representation of its model of itself, so that the formal model may include among its consequences the kinds of decision that the system might make based
 - ◆ not only on its model of itself (1st order), but also
 - ◆ on its model of the organisation of the way others respond to demand (2nd order), as well as
 - ◆ on its model of the organisation of demand itself (3rd order).
- » Hence the need for something like Dubois' "incursive" (formal) systems, and
 - ◆ the need to differentiate between the notions of 'time' inside the business (the 'simulation') and outside in the environment (the 'world').

Rosen, R. (1987) *Anticipatory Systems* Pergamon

Dubois, D.M. (1996) *Introduction of the Aristotle's Final Causation in CAST: Concept and Method of Incursion and Hyperincursion – EUROCAST'95*. Edited by F. Pichler, R. Moreno Diaz, R. Albrecht. Lecture Notes in Computer Science, volume 1030, Springer-Verlag, Berlin, Heidelberg, New York, pp 477-493.

Trajectories

- ◆ We are interested in formulating trajectories of Enterprises in that state space
 - *via* composition subject to constraints and invariants.



-
- ◆ ... but this means formulating a theory which can account for trajectories,
 - on the basis of which it is possible to claim ‘knowing’ what is necessary to and determinate of trajectories.

Types of Anticipatory Error

- ◆ So we are interested in what is *left to be desired* (lacking) *qua* ‘inadequacies’ in these theories :
 - Type I - behavioural inadequacy
 - » a correspondence error between the model and the (model of) the system observed.
 - Type II - compositional inadequacy
 - » a coherence error in the constitution of the models themselves.
 - Type III - ontological inadequacy (being lacking)
 - » an undecidability error in the constituting of the strategy for compositional abstraction.

... so when it comes to speaking about
'client systems', can we ask who is
lacking?

Who is talking? (Boxer 1997)

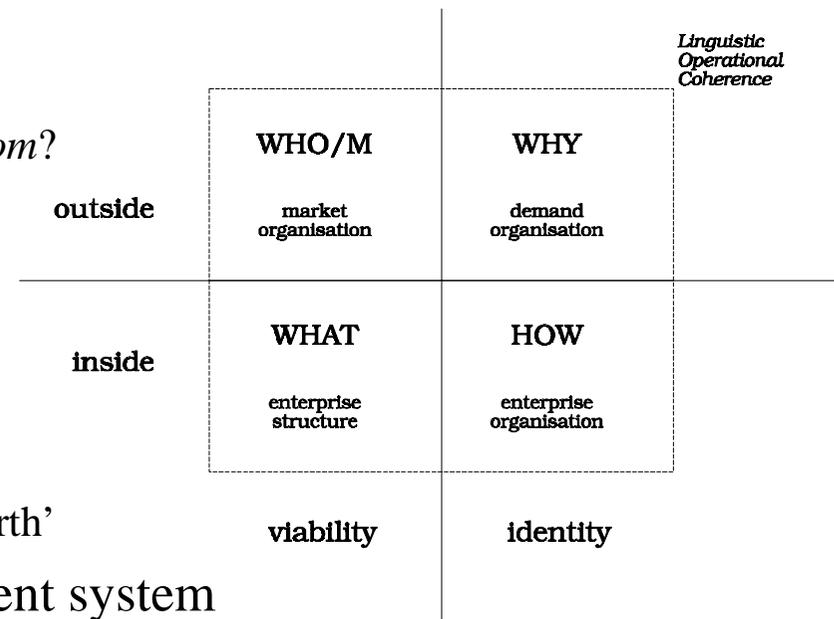
◆ Working with ‘client systems’:

- ◆ *What* do they do?
- ◆ *How* are they organised?
- ◆ *Who* are they trying to be *for whom*?
- ◆ *Why* can that be sustainable?

... rests on three distinctions:

- ◆ inside//outside
- ◆ viability//identity
- ◆ the semantic domain in which these distinctions are ‘brought forth’

... which are constitutive of the client system itself *qua* anticipatory system.



“The Stratification of Cause: when does the desire of the leader become the leadership of desire?” Proceedings of CASYS96, Psychoanalytische Perspectieven, 1998. Nr 32.

The Incursive Control Field

- ◆ With anticipatory systems,
 - The incursive control field works on the difference between the forward and reverse differentials:

$$\delta fwd(x[t]) = X[t+1] - x[t]$$

and

$$\delta bck(x[t]) = x[t] - x[t-1]$$

where

- » 't' is the 'inside' time of the simulation,
- » $x[]$ is observable in relation to the 'outside' time of the world,
and
- » $X[]$ is anticipated.

Chaos and indeterminacy

- ◆ Hyperincursion occurs where there is an indeterminacy
 - necessitating the introduction of an ‘anticipatory’ cause into the ‘inside’ time of the ‘present’ moment
- ◆ An ‘anticipatory’ (Dubois’ Final) cause becomes (an attempt at) a self-fulfilling prophesy which operates at the level of ontological inadequacy. Thus
 - Hyperincursive control extends the scope of determinacy from
 - » the 1st cybernetics as mechanical objectivity, beyond
 - » the 2nd cybernetics as computational determinisminto a
 - » 3rd cybernetics as ‘anticipative’ dynamic stabilisation.

Explaining observers (after Maturana)

◆ But who is the observer?

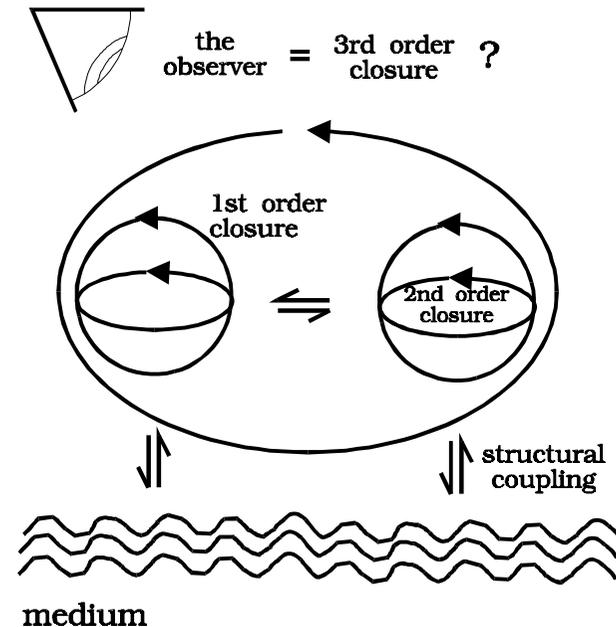
- » “the social singularity defined by the operational *intersection* in the body of the recursive linguistic distinctions in which it is distinguished...”

... and what is being explained?

- » the four causes necessary and determinate to the behaviour being explained.

SO

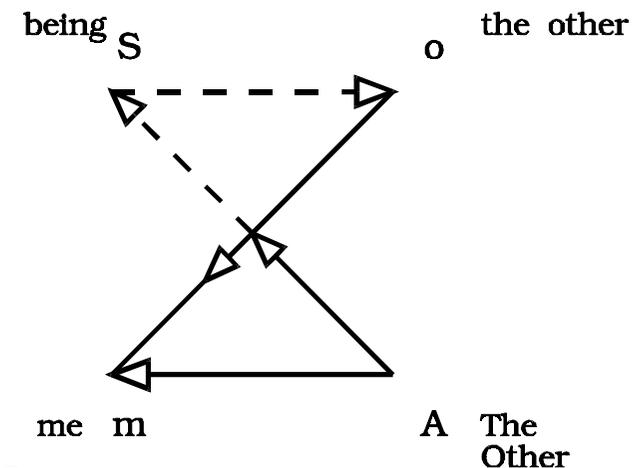
- Is the observer nothing but a 3rd order anticipative system?
- What is constituting that which is constitutive?



“The Tree of Knowledge: the biological roots of human understanding” H.R. Maturana and F.J. Varela, Shambhala 1987.

The intersection of the 'body' and the 'I'

- ◆ If we approach the medium, in which this constituting of being is taking place, as a symbolic medium,
 - then we can think of this as an Other axis of intersection (after Lacan) in which
 - » the observer (me-other) is both constituted by this medium, and seeks to constitute him/herself as this medium,
 - » but in which the medium itself has 'gaps'/undecidabilities in it.
 - These 'gaps' therefore become constitutive of what-is-left-to-be-desired for the observer.



Lacan addresses the question of the basis of the identifications of the ego directly in "Ego-ideal and ideal ego" in *The Seminar of Jacques Lacan Book I: Freud's papers on Technique 1953-1954*. Jacques-Alain Miller (ed) Cambridge University Press 1988.

Undecidabilities in the eye

- ◆ Thus,
 - The (2nd order) purpose of the observer
 - ◆ takes the form of a demand which is always constituted within the medium.

but

- There is always a *lack* to this purpose
 - ◆ which is an effect of the gaps in this medium, and which is
 - ◆ constitutive of a third-order cybernetics,
 - ◆ insofar as there is an identification to this lack itself.