

# Developing the VSM

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# What is the system of systems?

- At its heart the VSM enables us to explore the most fundamental aspect of all systems - their viability – viability is the key system of all systems
- The VSM is an epistemology for understanding viability
- We need to be able to place human behaviour, emotions and human meaning in the VSM so we can understand human organisations, social groups, politics, narrative, art
- It is also not a good forecasting or design model

To extend the VSM we need to tackle its cybernetic origins

# Key aspects of the VSM

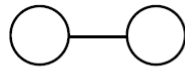
System	VSM	Modified for this presentation
System 1	Autonomy	Autonomy
System 2	Anti-oscillation - local regulation - coordination	cohesion – harmony (discord)
System 3	Inside and now	coherence
System 4	Outside and then	anticipation – imagination
System 5	Policy	Beliefs - Ideals

<b>Knowledge from Insight</b>	<b>Unknown (no insight)</b>	World experienced but outside understanding			World outside experience and understanding
		Theory	Confabulation	Imagination Creativity Abstraction Pseudo-science Religion - Faiths	
		Accommodation	Sensemaking Beliefs	Rationalising	
		Knowledge gained from interaction between experience and understanding  Equilibration	Assimilation	Pseudo experience through language, play, training, simulation	World within understanding but outside experience
		<b>Known (experienced)</b>			<b>Unknown (not experienced)</b>
<b>Knowledge from Experience</b>					

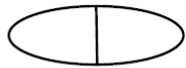
Novelty - We need a System to be able to create new ideas from its imagination - ideas that are outside their normal domain of thinking and experience,

# How is meaning generated in the VSM?

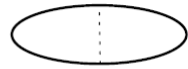
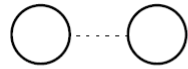
- Laws of Form (Spencer-Brown)
- Difference is the source of meaning to a system



BROADCAST



INTIMATE

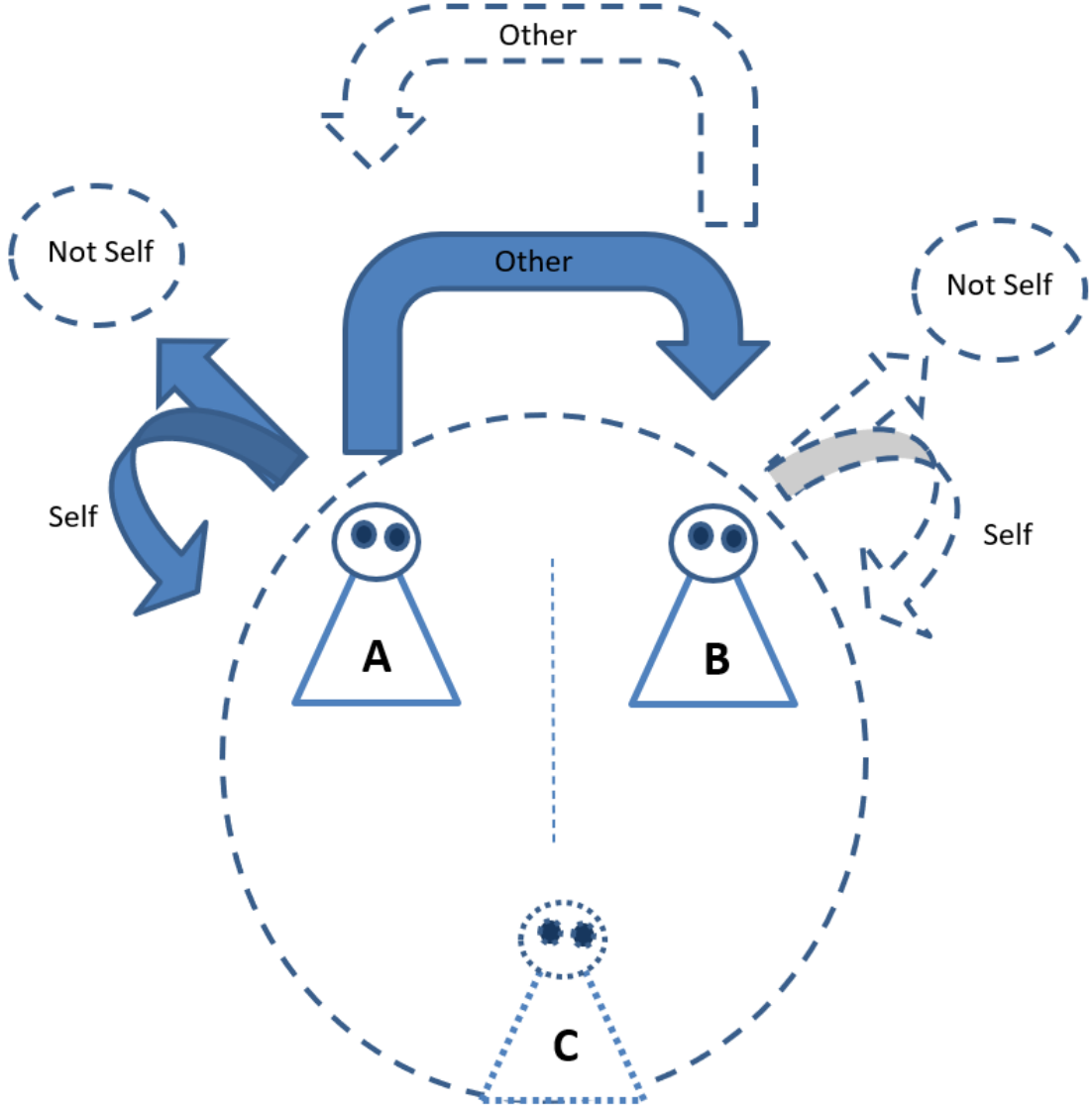


- We start with a “Formless Void”





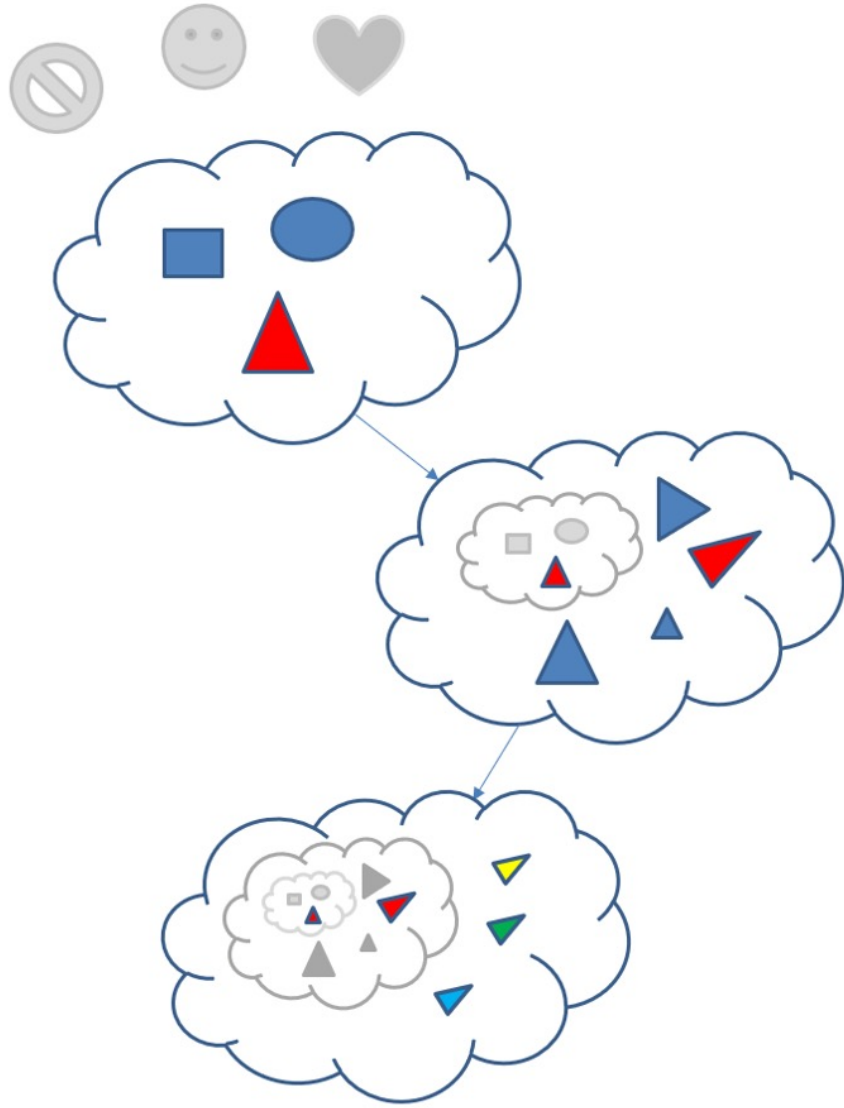
Meaning comes from  
difference  
Meaning comes from  
value  
Meaning comes from  
the difference that is  
valued



Glanville R. & Varela F. J. (1981) "Your Inside Is Out and Your Outside Is In"

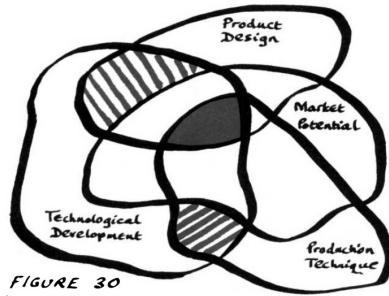






## Where are distinctions in the VSM?

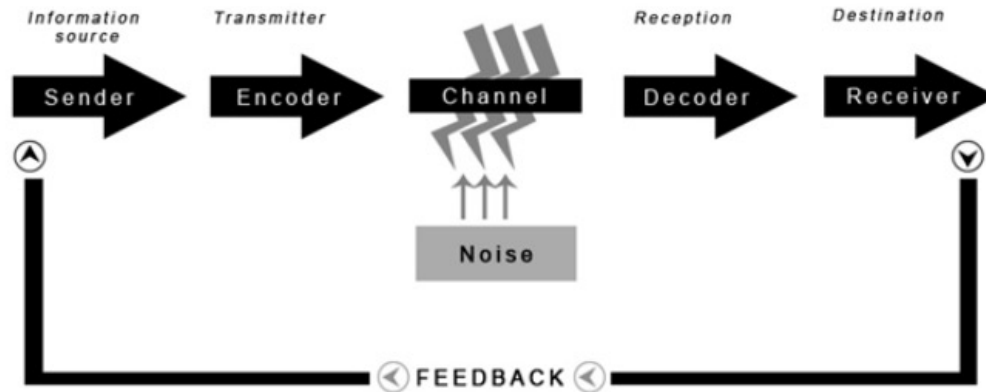
- Categorising the variety of the environment
- The System 1 makes a distinction of the variety in the environment based on its motive



- The System 1's Meta System sees the System 1 distinctions as a second order observer
- But is not able to see the value of the System 1 distinctions

## The Third Principle of Organization

•Wherever the information carried on a channel capable of distinguishing a given variety crosses a boundary, it undergoes transduction; the variety of the transducer must be at least equivalent to the variety of the channel.



SHANNON-WEAVER'S MODEL OF COMMUNICATION

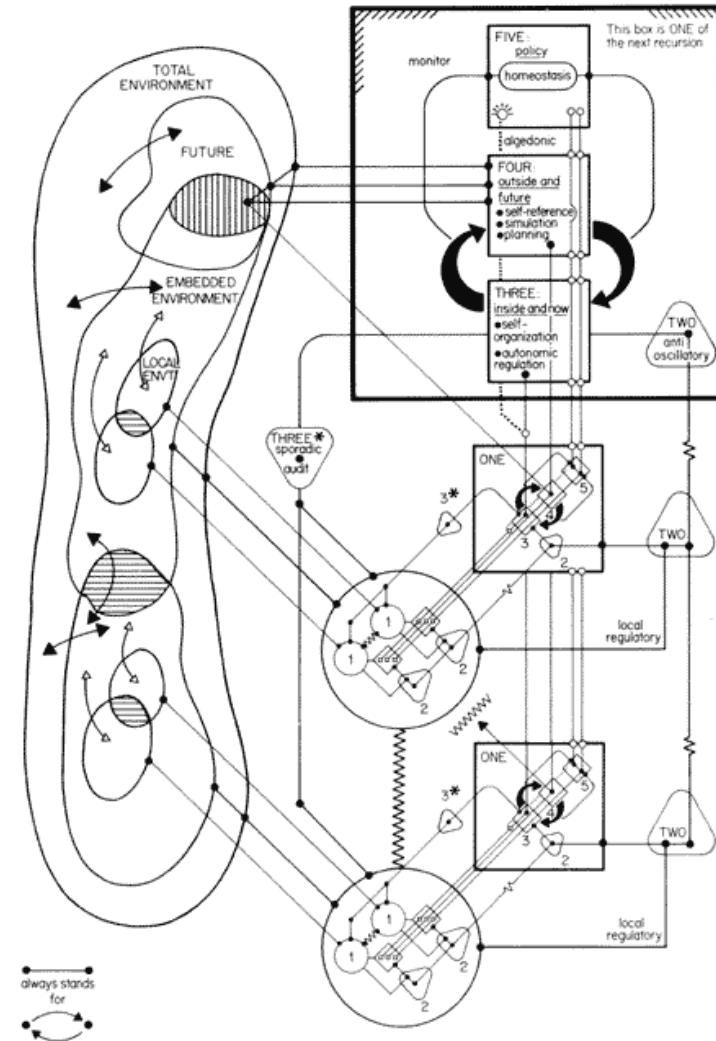


FIGURE 37

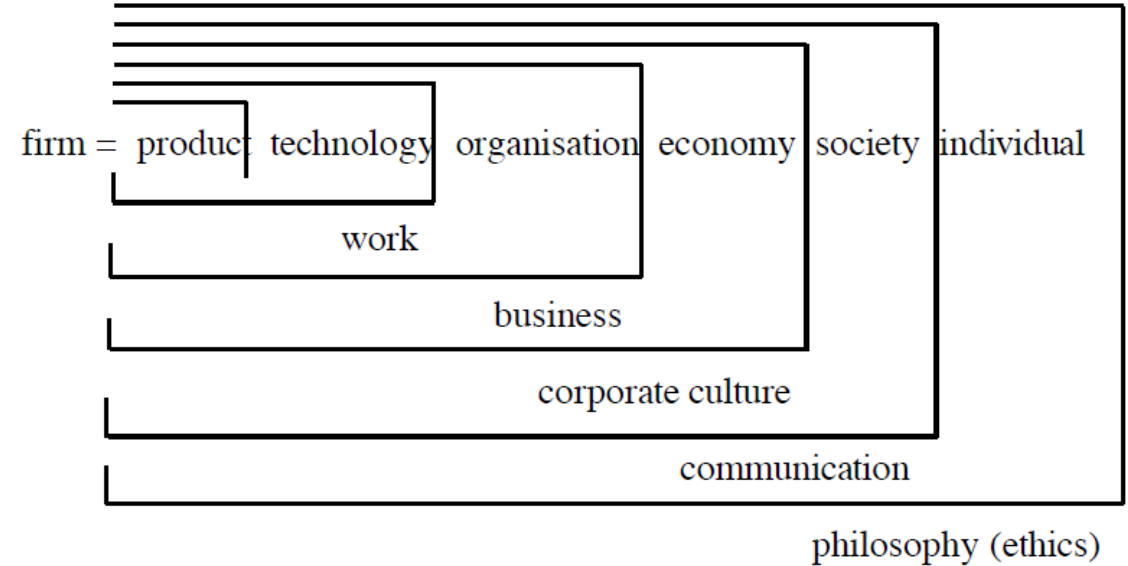
THE VIABLE SYSTEM  
- Stafford Beer

Re-entry occurs in the repeated recursions throughout the system generating meaning as it goes

At System 3 Coherence Brings it all together

But System 2 is doing the work of deciding what creates harmony and cohesion

*“Any organisation ... has its own history, which is known only to itself and is only partially known to itself. ..The history of the organisation is embodied in its procedures, its statutes, its written and unwritten rules, its technologies, its buildings, its mission, ideals and ideology, its people, its knowledge, its management, its markets, and its networks”. Baecker, D, (2006),*



The General Model of the Firm

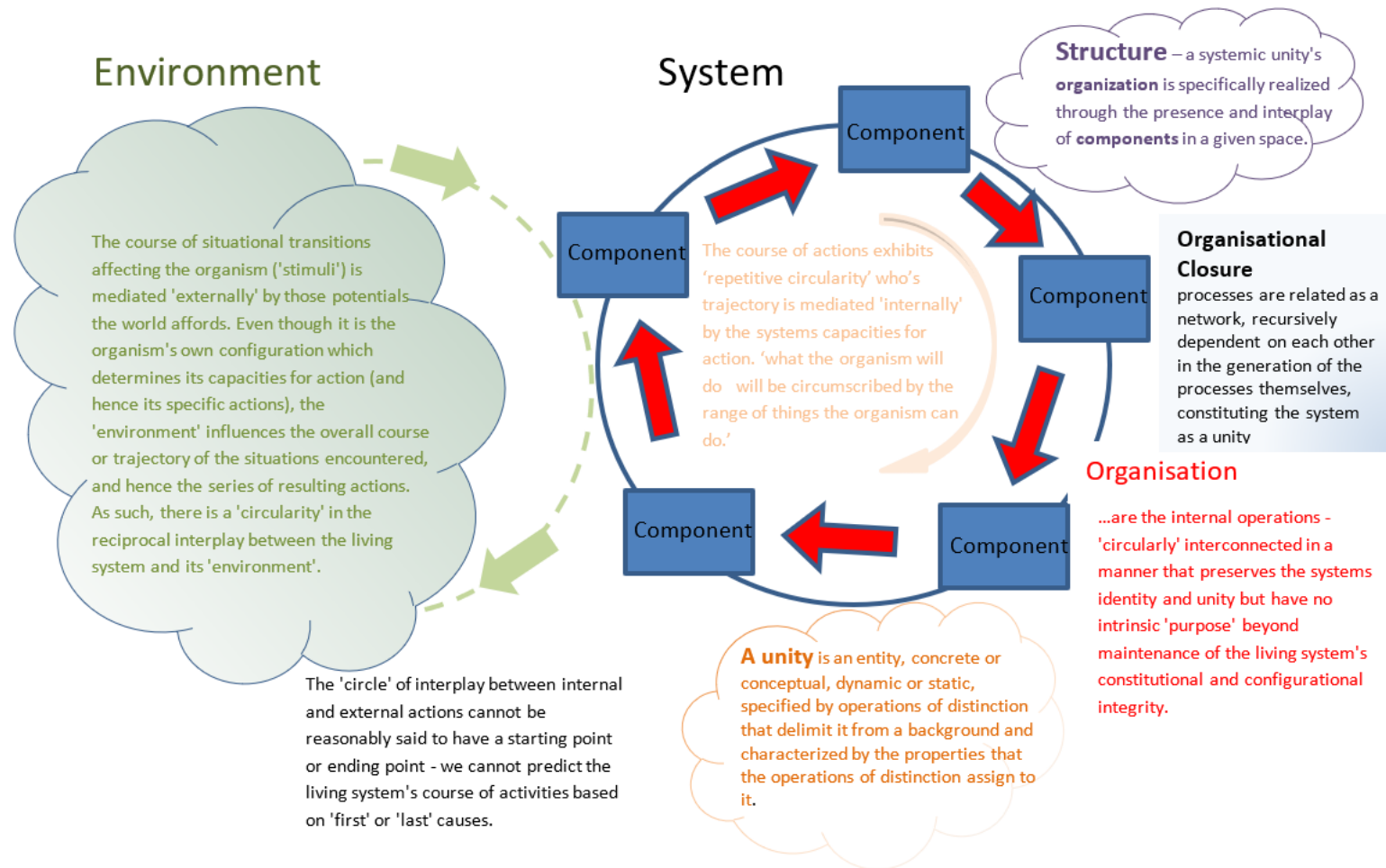


## Colombetti (2010) Enaction sense-making and emotion:

- “...the theory of autopoiesis becomes, more explicitly than in other texts, a theory of the origin of meaning in living systems.
- At this level of description, to cognize and to make sense in virtue of one’s autopoietic and adaptive nature are one and the same process. **This process can also be seen as emotional, in that it provides values and induces actions accordingly (motivation), and in that these values and actions are self-regulating and adaptive organismic processes”**

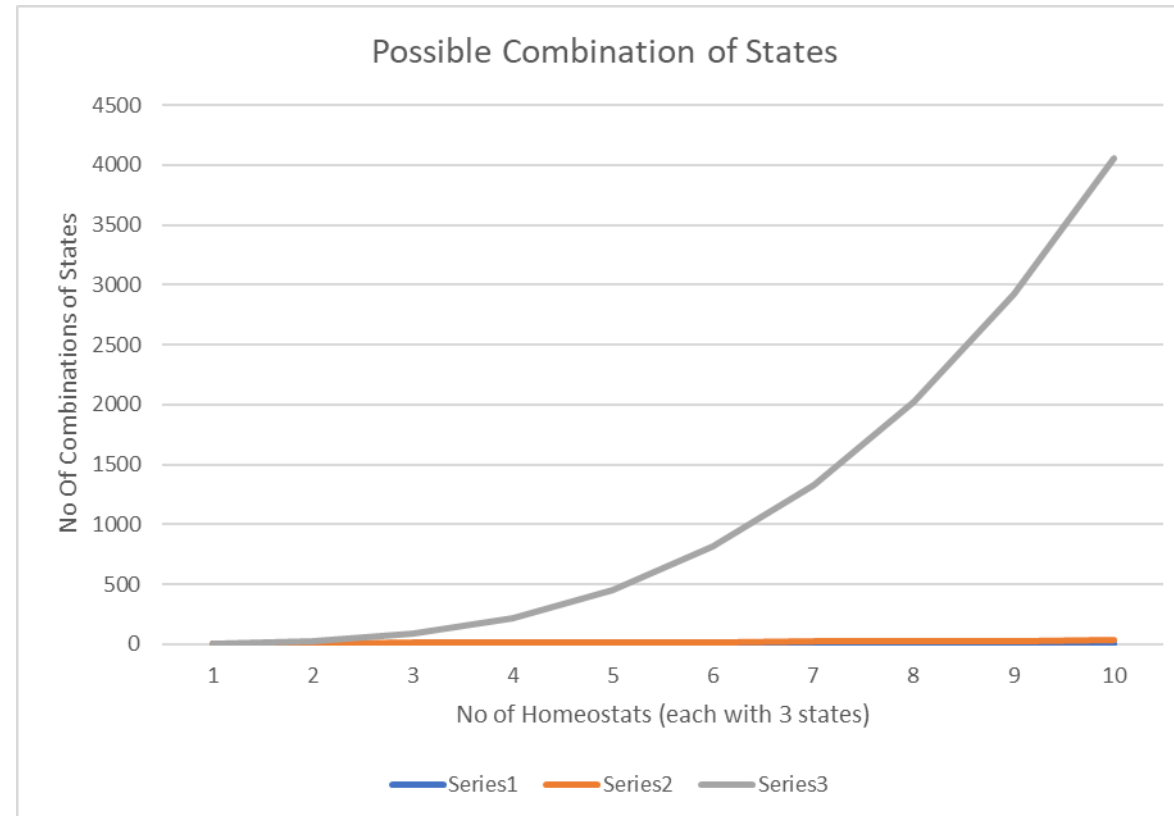
- Where is Autopoiesis in the VSM?

## Circularity of Systems – Autopoiesis



# Where is memory and where is learning in the VSM?

- Homeostats
  - Homeostats do not learn but randomly assign states until they re-establish ultra-stability



# How about the System 4s

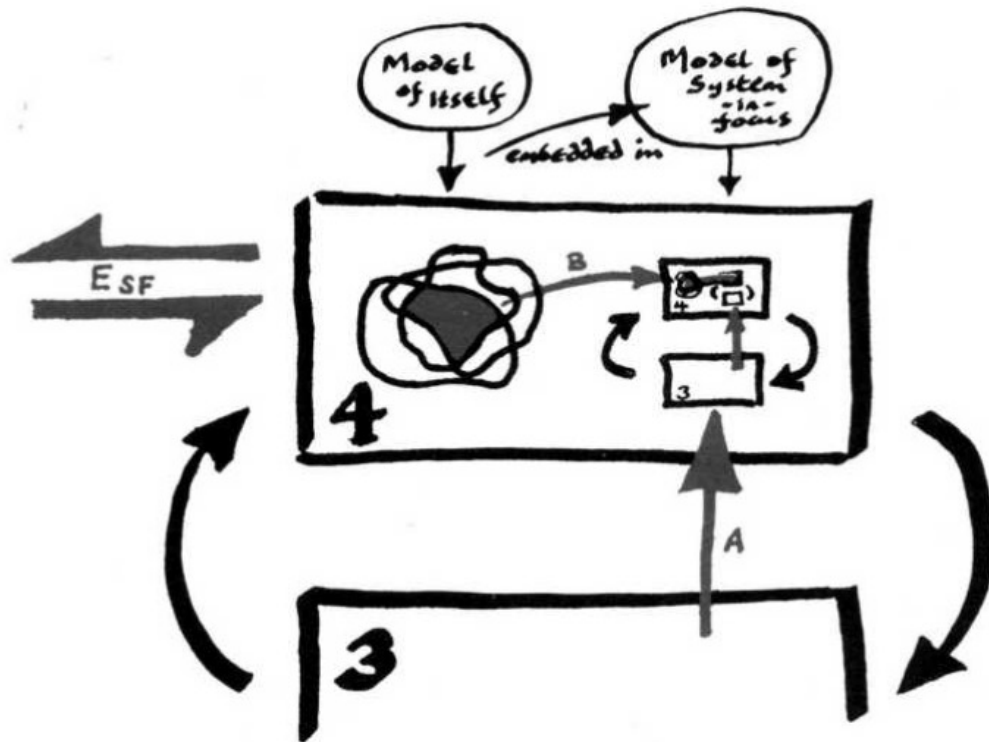
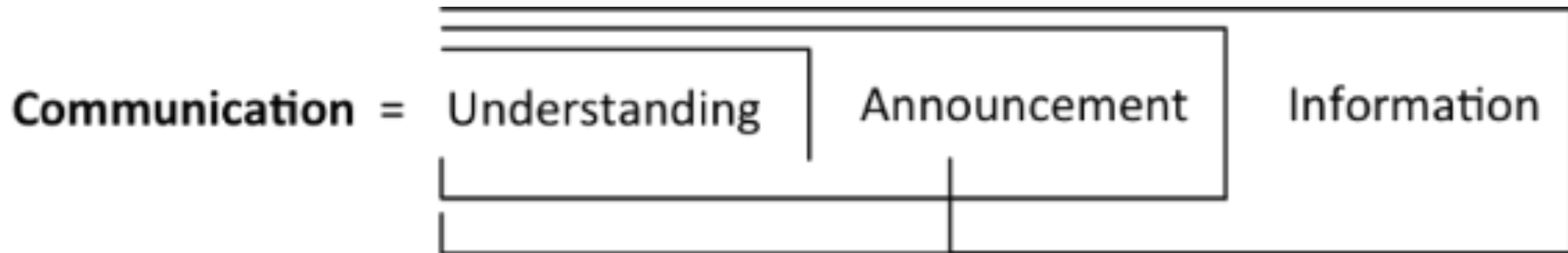


FIGURE 32

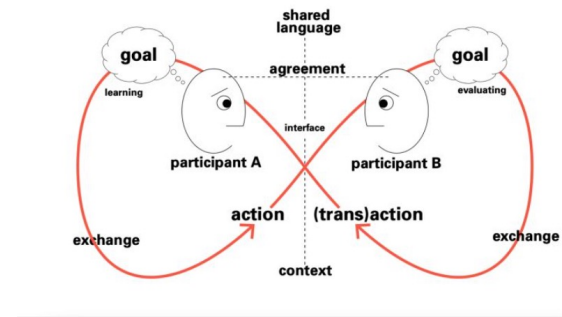
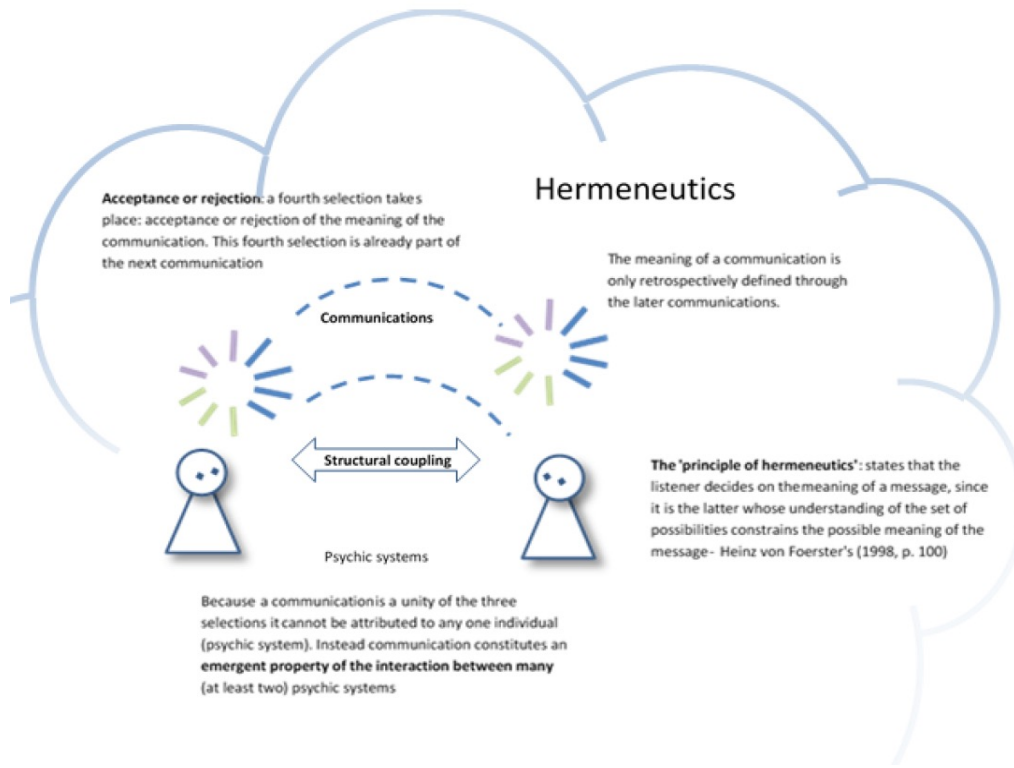
*“Natural cognitive systems do not build 'pictures' of their world (accurate or not). They engage in the generation of meaning in what matters to them according to the logic laid by their self-sustaining identity. They enact a world. The notion of sense-making grounds in biological organization a relational and affect-laden process of regulated exchanges between an organism and its environment”.* DiPaolo

# Where is communication in the VSM?

- Luhmann considerably expands Shannon and Weaver  
"Only communications create communications"







## Expectation Structures



**What communications** - So far, we have discussed the how and why of communications  
 - The structure of social systems determines **what** communications are produced.

**Structure of communication** - Luhmann conceptualises **social structures as expectations** (Luhmann 1995a). An expectation can pre-select the possibilities for further communications: it makes certain communications more likely than others (it does not however exclude any possibilities completely). These expectations are recursively reproduced through the communications. Whenever a specific expectation is met by an adequate communication the expectation is confirmed and thus likely to continue to function as a structure

**Topic** - An important form of social structures is the topics of communication. Topics provide pre-selections of all in principle possible communications: certain possibilities of communication fit a specific topic and others do not

**Double Contingency** - Luhmann attempts to view double contingency as something productive: It cannot be eliminated from interaction, but it induces self-observation and reflexivity which, in turn, reduce the improbability of communication. It stimulates the emergence of simple social systems if, in the two communicators-case, ego agrees with alter ego: 'I will do what you want if you do what I want'. Ego - appropriating the information given by alter - adopts it as the premise of her response.

“How can I know what I mean until I see what I said”

# Enaction (Di Paolo, Bandarana, Thompson, Varela, Colombetti, De Jaegher)

- Sensemaking - engagement, action, perception, generation meaning
- Adaptivity – homeostatic, variable able to maintain viability,
- Precariousness
- Plasticity
- Autonomy
- Assimilation negative feedback
- Accommodation positive feedback homeostats
- Agency
- Participatory sensemaking

# Adaptivity – precariousness – non viability

- the need to develop behaviours to achieve goals - to change your own system
- adaptivity cannot just be about maintaining a state within a single domain
- sometimes the system in focus must change not just the state of its components (sub-systems) but sometimes it must reorganise and even change its sub-systems

# Where is creativity in the VSM?

- Why do we need creativity?
- Stafford Beer - entelexy - a system realising its full potential
- There is a tension between creativity and stability

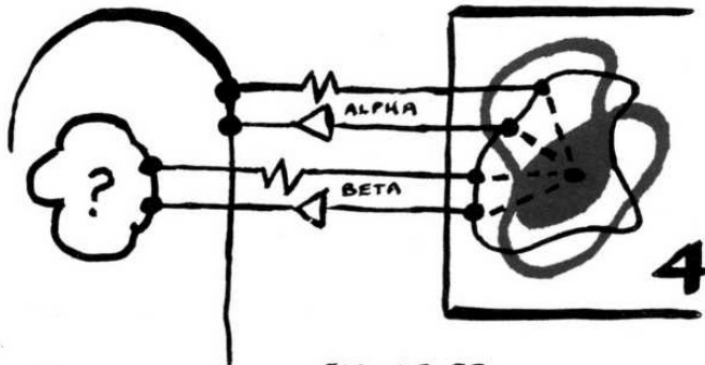
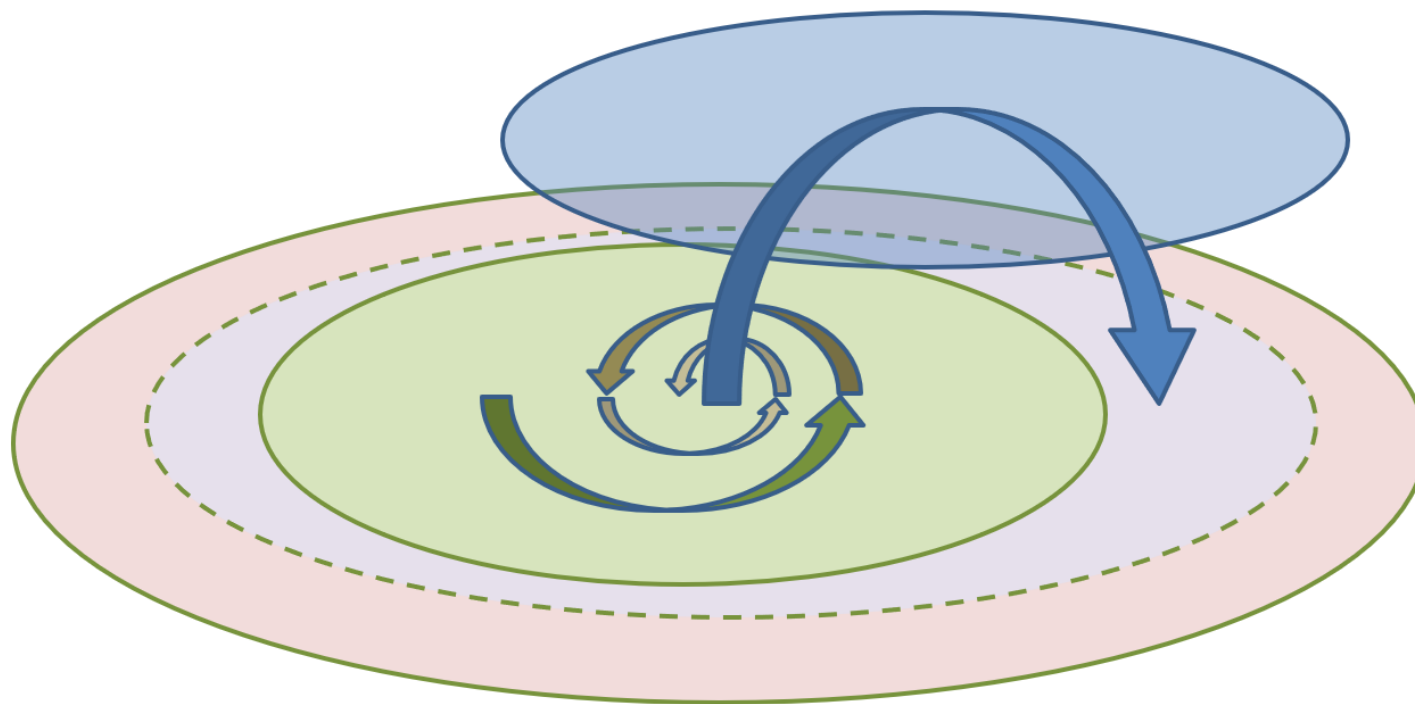


FIGURE 33

Re-entry the source of creativity





# Creative processes

- Bateson – “the pattern that connects”
- Abduction - Peirce
- The role of chance [Homeostat] and natural drift
- Mathematics
  - Golden number - phi
  - Pi
  - Complex numbers
- Hegel's triadic development
- Gahranjadani Dialectic
- Pask's conversation theory
- Hero's Journey - The Monomyth

