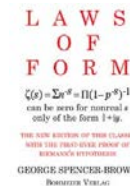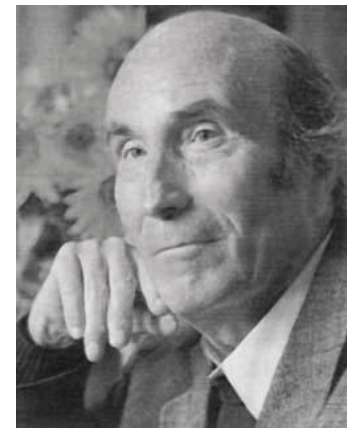# Niklas Luhmann's Systems Theory

Niklas Luhmann (1927 – 1998)

- Sociologist, systems theorist
- Devised a theory of society as closed, **autopoeitic**, self-referential systems of communications.
- Opposed the Frankfurt School and Critical Theory

3 important influences:

1. **Autopoeisis** and the Biology of cognition (Maturana and Varela)
2. Neo-cybernetics and **second-order observing** (Heinz von Foerster)
3. A theory of **distinctions** (aka Logical calculus of indications by Spencer-Brown)

Niklas Luhmann's Systems Theory

Main points:
1. Social Systems Theory (SST) emphasizes the distinction between system and environment or inside/outside (rather than part/whole)
2. Social Systems consist of communications between people, not the people themselves!
3. People (their minds and bodies) are outside social systems, i.e. are not parts of society, but parts of society's environment!
4. Humans cannot communicate: only communications can communicate!
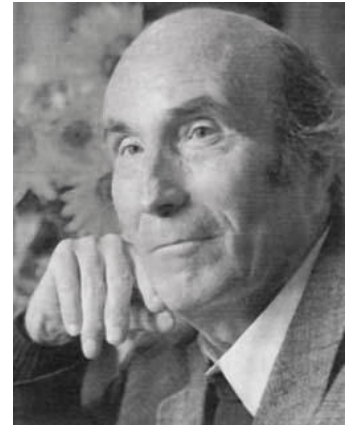
Typology of Systems
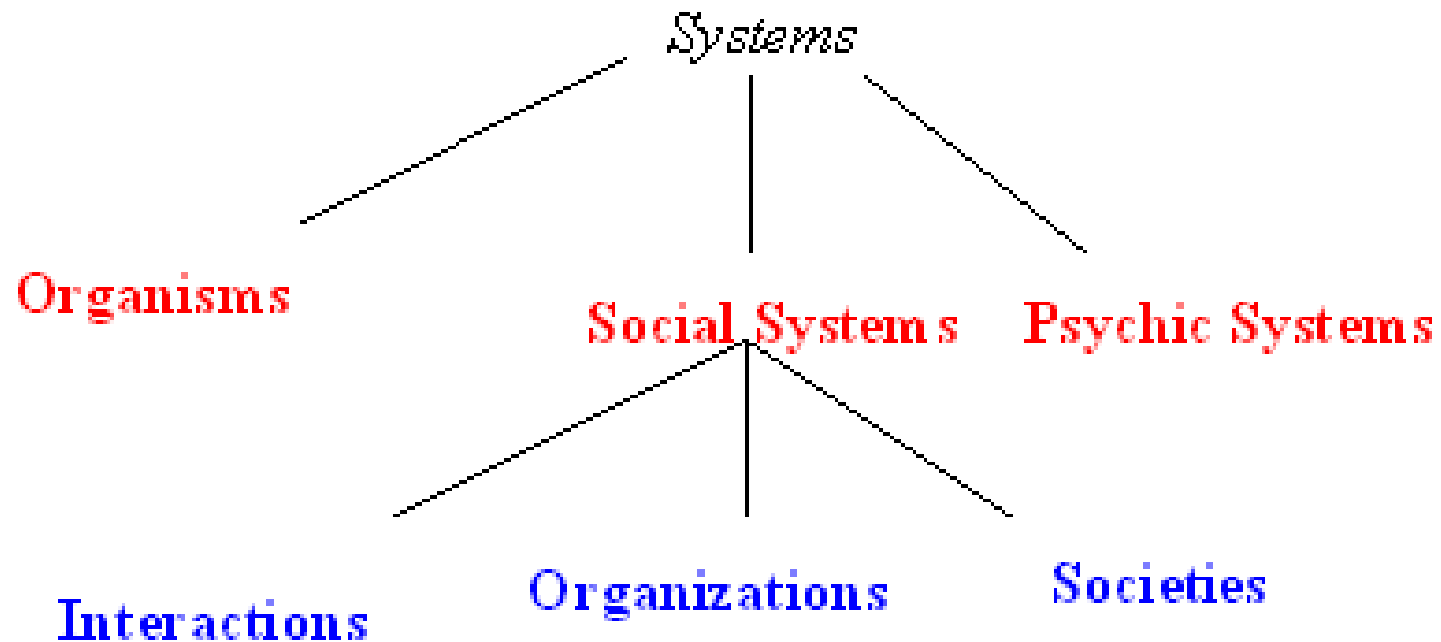
System and Environment

Environment
(Background)

System
(Foreground)

- Systems distinguish themselves from their environments.
- **People are outside of society:** Communication does not communicate the people-in-themselves
- Our thoughts (or actions) do not make a difference to society (either in inter-personal encounter, an organization, or a larger system) *except insofar as they are communicated*.

System and Environment

- **"Systems can only communicate *about* their environments, not *with* their environments"** (Luhmann 1995: 410).
- The boundary of system and environment also defines the limits of the system's control: the environment is that which the system cannot control.
- Systems can relate to its environment as **information** and as a **resource.**

"thinking without comparison is unthinkable."
Guy E. Swanson (1922-1995)

Environment as Information and Resource


2. Uncertainty Relation: Environment as *Information*

Environment
(outside)

System
(inside)

Distinction
/boundary
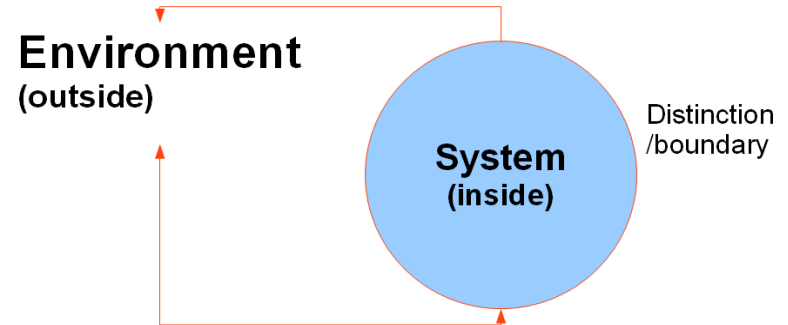
1. Dependency Relation: Environment as *Resource*

Second-Order Observing

- **To "observe"** is to distinguish, in order to indicate one side of a distinction.
- All observing has a blind-spot: one cannot observe both the world and one's observing *at the same time*.
- *Observing has two levels:*
  1. First order observing = **the what**
  2. Second order observing = **the how**; observes *how* others observe *what* they observe, by *distinguishing (comparing) the distinctions that make possible that observation with other possible distinctions* (and hence other points of view).

# Second-Order Observing

- "Second-order observing" = observing observing. Just as "second-order explaining" explains explanations. And "second-order" dreaming dreams dreams.

- This method of applying a process to itself is known as **recursion.**
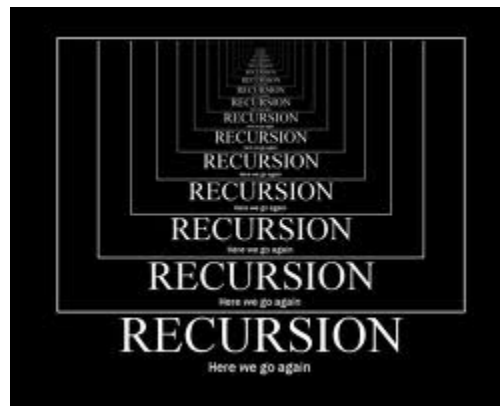
Society, Encounters, and Organizations
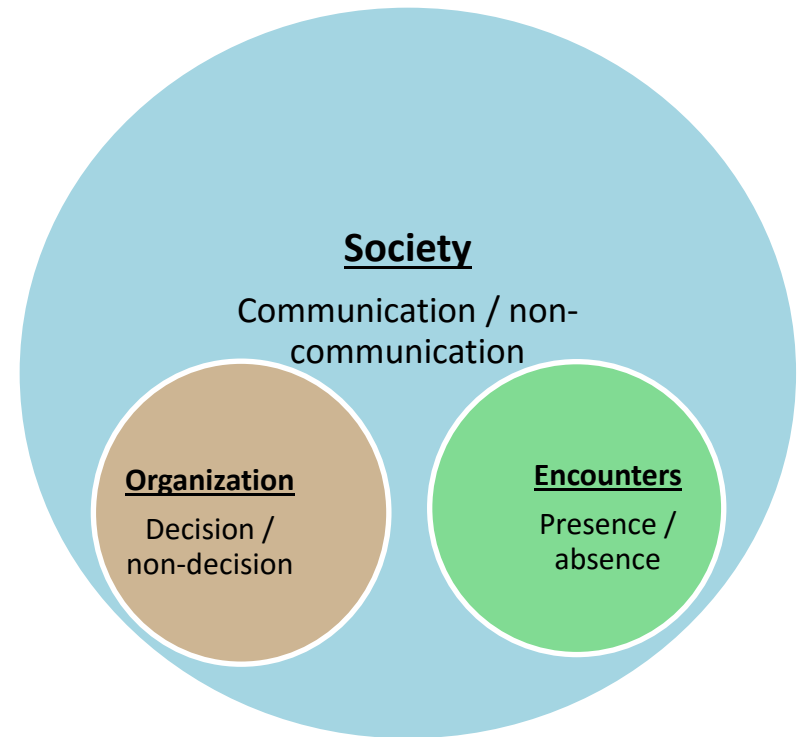
Three types of Social Systems:

1. **Society** = the super-set of all social systems or communicative events,
2. **Encounters** = (aka **Interactions**) face-to-face interactions driven by co-presence and mutual awareness; *Groups* arise when encounters happen repeatedly between the same people
3. *Organizations* = identify *relevant* communications as *decisions*; specifically, organized communications distinguish between: *decision-within-a-network* and *not-a-decision-within-that-network*.

Society
Communication / non-communication

Organization
Decision / non-decision

Encounters
Presence / absence
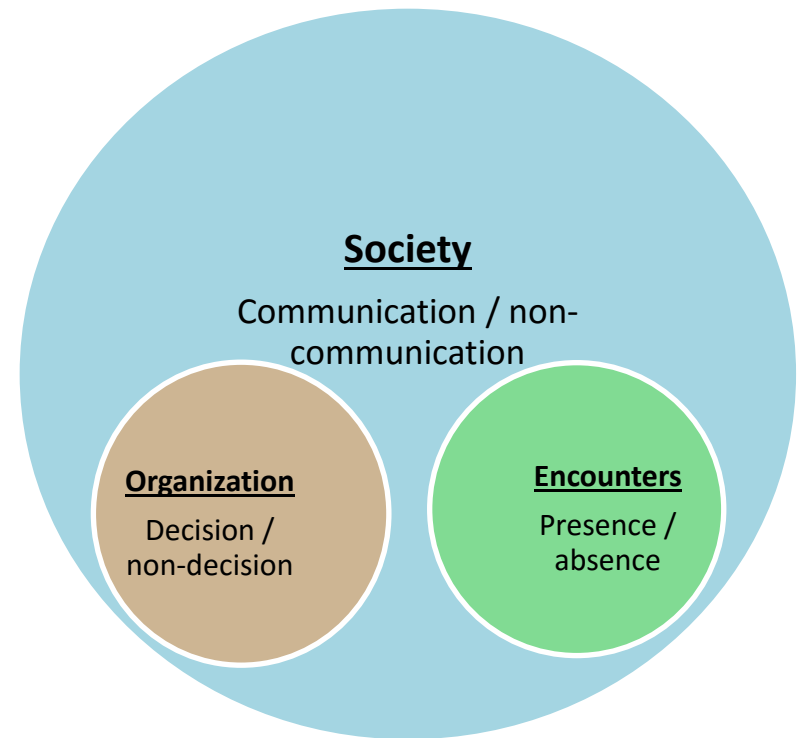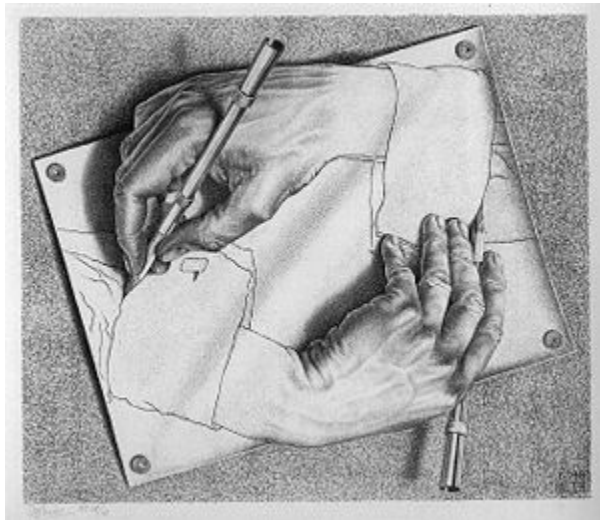
Society, Encounters, and Organizations

Organizations:

- *Organized communications are unique to modern society*
- *Distinguish between **persons** and **roles**;* formal and informal communication, official and unofficial; distinguishes between **members** and **non-members**
- Can only exist by filtering out complexities involving personal needs and idiosyncracies: Organizations foster an ***indifference to the personal***.

Society
Communication / non-communication

Organization
Decision / non-decision

Encounters
Presence / absence

Autopoiesis

M.C. Escher's "Drawing Hands" as a depiction of Autopoeisis.

- **Auto = self poiesis = creation, production**

Chilean and Argentian biologists Humberto R. Maturana and Francisco J. Varela coined the term "Autopoiesis" in 1972.

Autopoiesis

- Autopoiesis literally means **self-creation** and is synonymous with **circularity**, **recursion**, and **self-referentiality**.

- A system is 'autopoeitic' if the **whole** produces the **parts** or **elements** from which it is made.

- For Luhmann, **society** is an autopoietic system whose elements are *communicative events* reproducing other communicative events…

Luhmann's metaphor of communication

Understanding

Information

Utterance
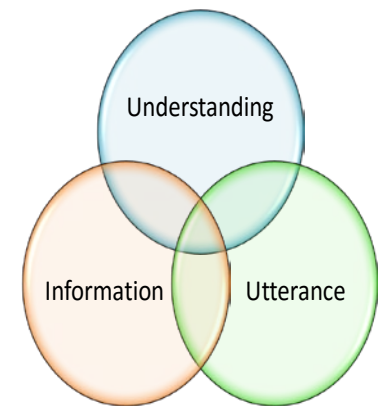
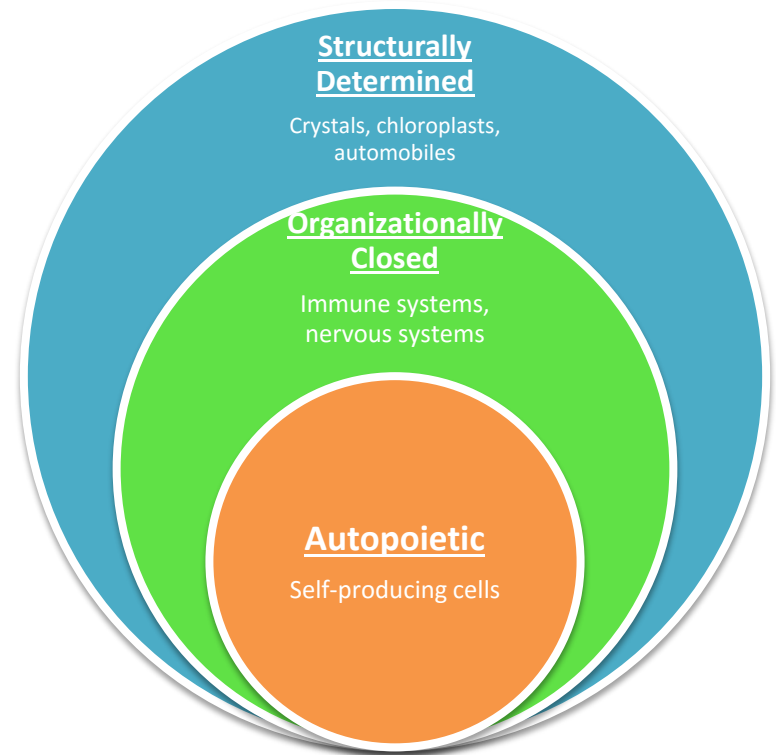# Autopoietic, organizationally closed, and structurally determined systems

Autopoietic systems are characterized by both:

1. ***Structural determinism*** - changes within a system are ultimately determined by the system itself, and not to external causes in its environment. Factors in the environment can only act as triggers of system-generating events, but how the system responds is up to the system;

   - EXAMPLE: What causes the slinky to oscillate?
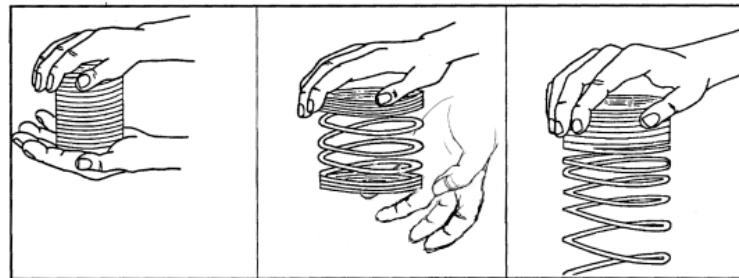
Autopoietic, organizationally closed, and structurally determined systems

2. ***Organizational closure*** - all of the activities of a system must generate further activity only within itself.

-   Nervous systems, immune systems, and social systems can be regarded as organizationally closed.

-   **Implication: my thoughts are always my own, never yours! I cannot feel your pain! How, then, is communication possible?**

Structurally Determined
Crystals, chloroplasts, automobiles

Organizationally Closed
Immune systems, nervous systems

Autopoietic
Self-producing cells

Two 'channels' of Communication

All communication has two levels: **content and relationship levels**

Content	Relationship
"Report"	"Command"
Information	Behavior (meta-information)
WHAT is communicated	**HOW** something is communicated

- All communication is both communication and communication *about* communication.

Two 'channels' of Communication

- When we communicate **symbolically** we are always also communicating **behaviorally** (at the relationship level) simultaneously!

- We can think of this as being like two channels of communication operating at the same time.

- One can focus on either the information or how the information is expressed.
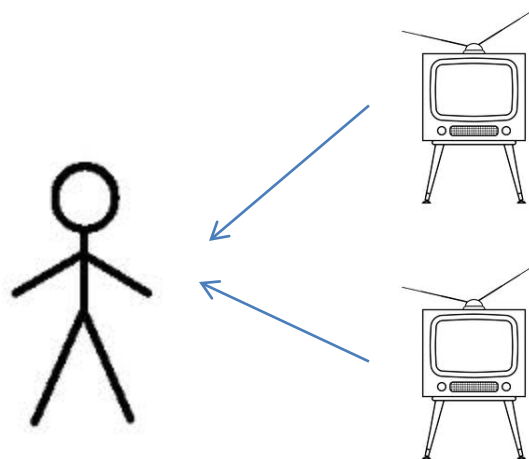
Two 'channels' of Communication

- One can focus on either *the information* or *how the information is expressed*.
  - Communicating about something is always also a way of communicating about oneself and about the other that one addresses.
  - An observation always conveys as much information about 'the observer' as it does about that which is observed.

Communication is imaginary

Points about Communication:

- The communication sent is not necessarily the communication received.
- Communication happens in your own head.
  - You have to infer whether or not someone is communicating with you.
  - What that communication means must also be inferred/imagined.
  - From the senders perspective, **the meaning of the communication is the response you elicit**
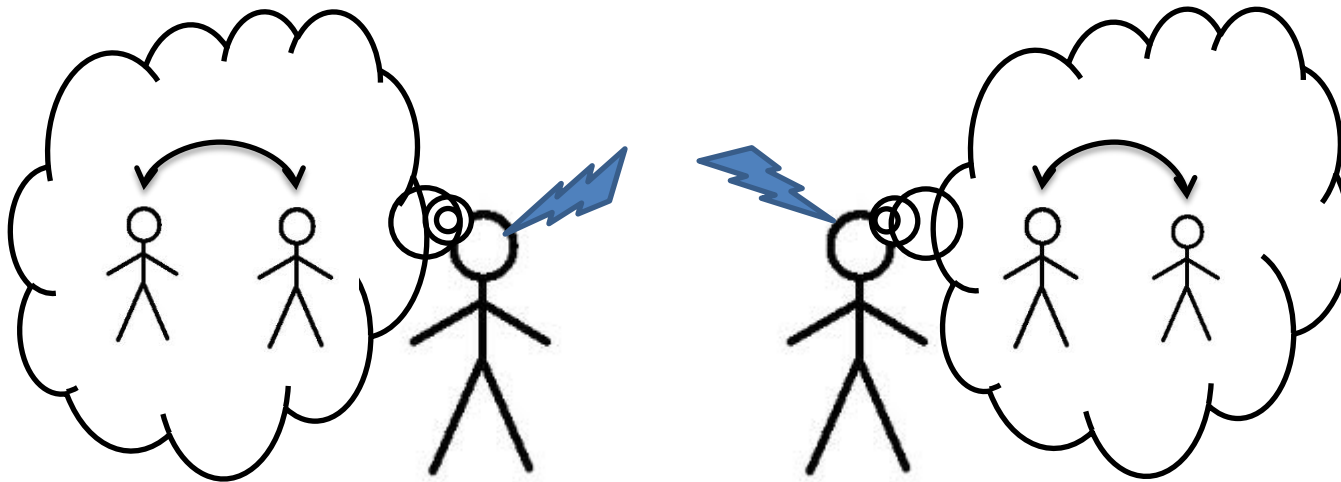
No physical 'transfer' takes place!

Communication is imaginary

- You can only observe how people are reacting, and even then according to your own reference frame, but you can't observe what something means in someone else's head!
  - You notice that someone coughs: is this a communication? Maybe…
  - How do we know inanimate objects, animals, or the cosmos (ET's) aren't communicating with us?
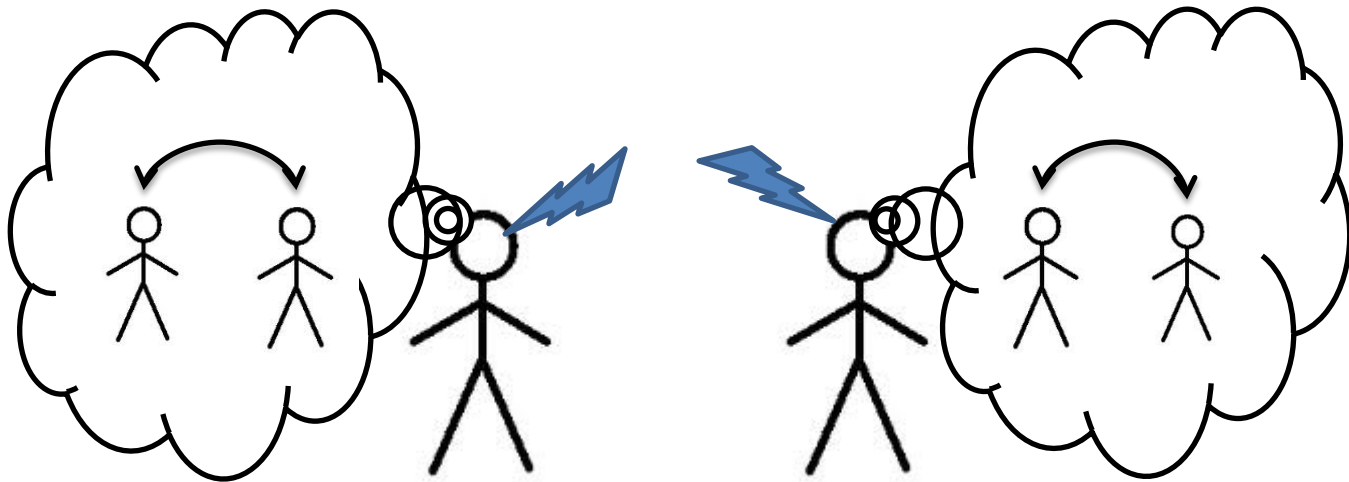
We observe others and then imagine they are communicating, or not.
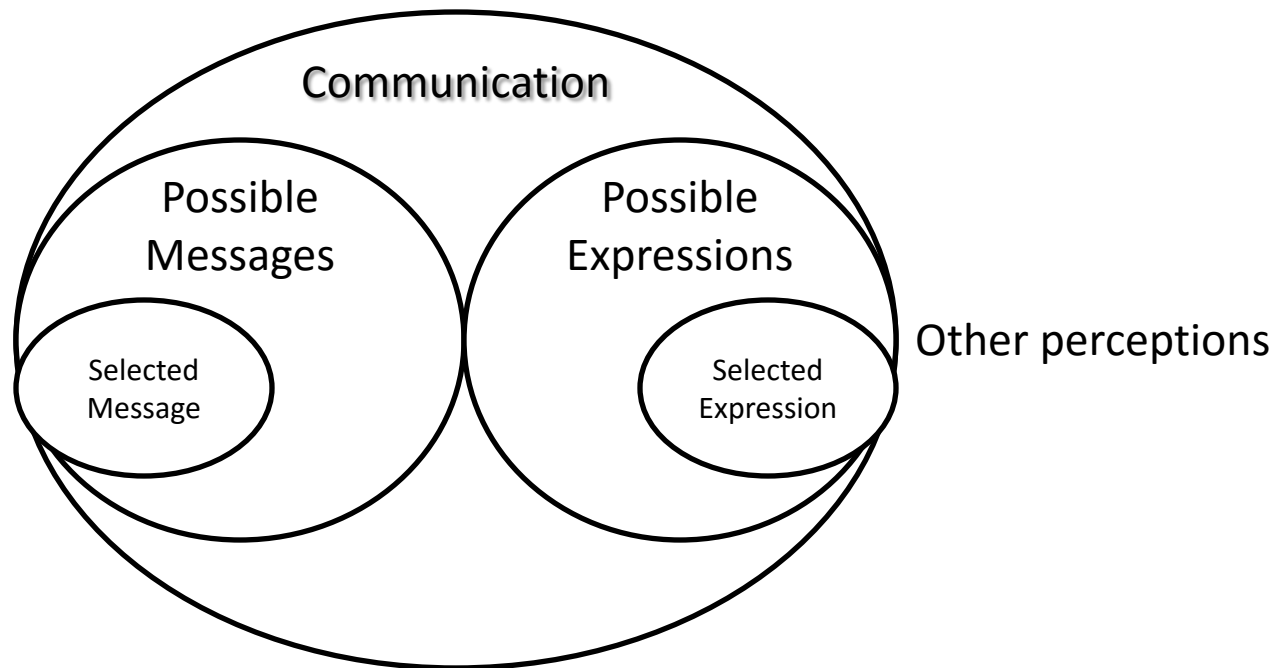
Steps to Communication

Communication has taken place when an observer infers that one possible behavior (among others) has been selected as a means of expressing one possible message or idea (among others)!

Communication

Messages

Expressions

Selected Message

Selected Expression
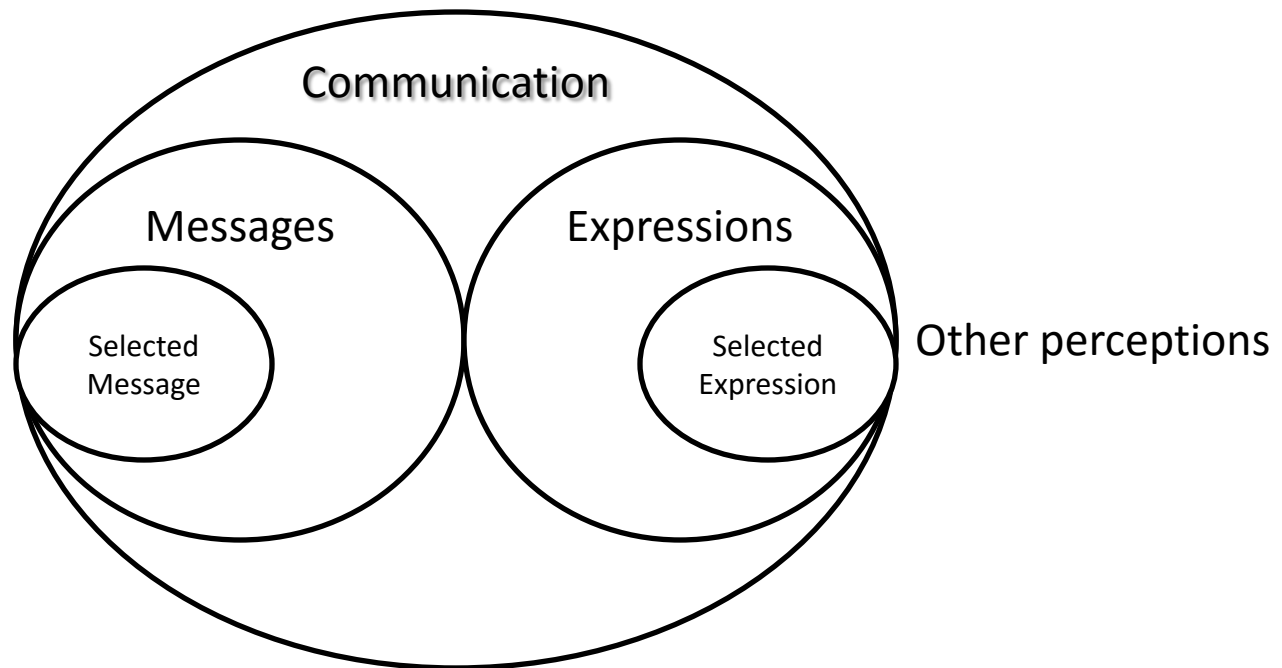
Other perceptions

Steps to Communication

The circles below represent *distinctions*. We can break down a communication into 3 steps, which actually occur simultaneously.

1. **A communication has to be *noticed*, or distinguished from other perceptions: one notices that a message (content/information) has been distinguished from a behavior, or means of expressing that message.**

2. **One must infer that the sender has chosen a particular message to convey (distinguished from other possible messages)**

3. **One must infer that the sender has chosen a particular way of expressing this message (distinguished from other possible ways of expressing it)**

Communication

Possible Messages

Possible Expressions

Selected Message

Selected Expression

Other perceptions

Steps to Communication

- **Communication happens when we infer that at least two selections have taken place: *what* (info) that is communicated, and *how* this info is expressed.**
- **'Selection'** means that both the information communicated *and* the means of expressing this information *could have been different.*

Communication

Possible
Messages

Possible
Expressions

Selected
Message

Selected
Expression

Other perceptions
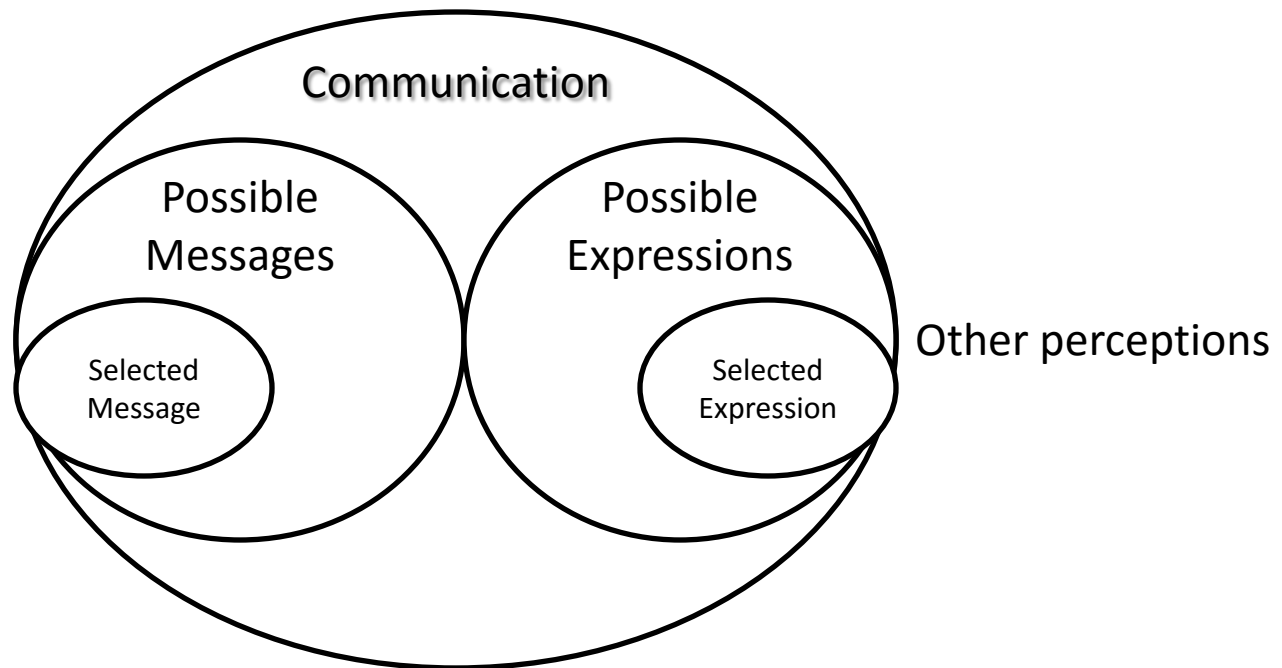
Meaning of Communication

What is Meaning?

• **Meaning has no opposite: 'meaninglessness' is meaningful!**

• **The *meaning* of a message depends on the *context* (set of possible messages) from which it is selected*.***

• ***The context of a message, however, cannot be communicated or directly observed! The meaning of a message is always inferred by the observer***.

MEANING = {ACTUAL / POSSIBLE}

Communication = Message | Set of Possible Messages | Network of Observers
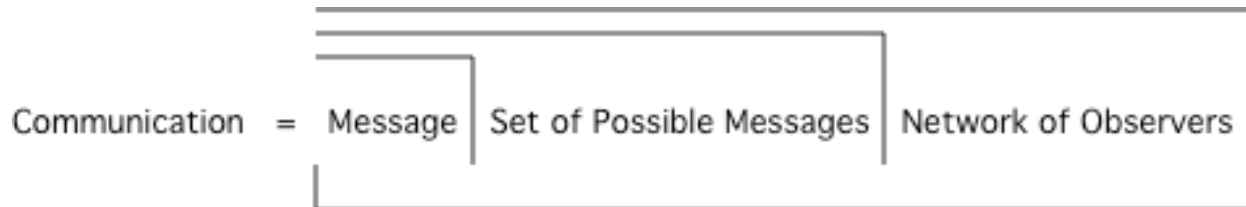
Hyper-Complex Society

Complexity =

1. a system becomes *complex* whenever it is no longer possible to relate every element to every other element in every conceivable way at the same time.

2. a system is *complex* to the extent that we can *observe it in non-equivalent ways, that is, observe it through multiple frames of reference.*
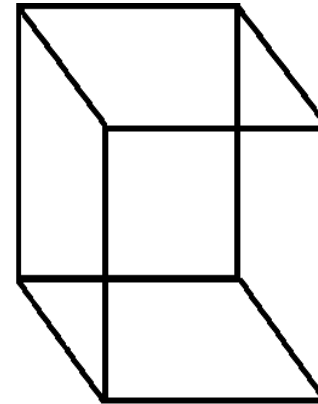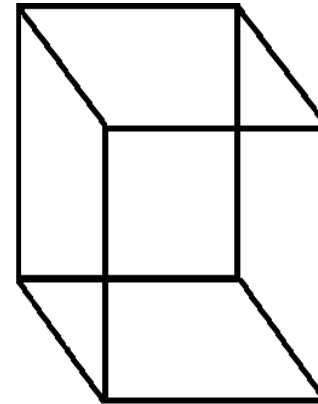
Necker Cube as Representation of Complexity
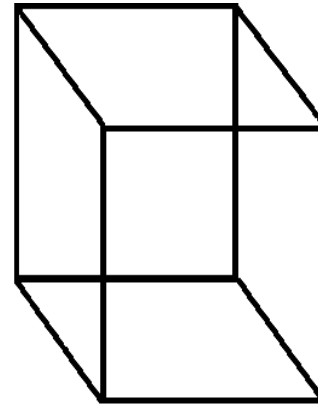
Hyper-Complex Society

Complexity =

- In other words, *a system is complex when there are available at any given moment more possibilities that it can actualize.*
- It follows that *a **system is complex to the extent that we can discern many distinct subsystems of it*** (Rosen 1985)*.*

Necker Cube as Representation of Complexity

Hyper-Complex Society

- *Whether or not something is 'complex' depends on whether we are able to observe it in a complex way!*
- ***Complexity is a property of observing (not observed) systems.***

**Necker Cube as Representation of Complexity**

Hyper-Complex Society

- Modern society consists of more and more channels of communication, which are different foci of attention…
- But these different, unrelated perspectives *must be inferred*. It is still possible to ignore complexity and regard society in black and white terms.

Hyper-Complex Society

- **Hyper-Complexity =** Complexity of Complexity; Second-order complexity; what happens when one (complex) observer observers another (complex) observer.

Traditional Society	Modern Society	Hypercomplex Society
C. 1400		C. 1900
Theocentrism	Anthropocentrism	Polycentrism
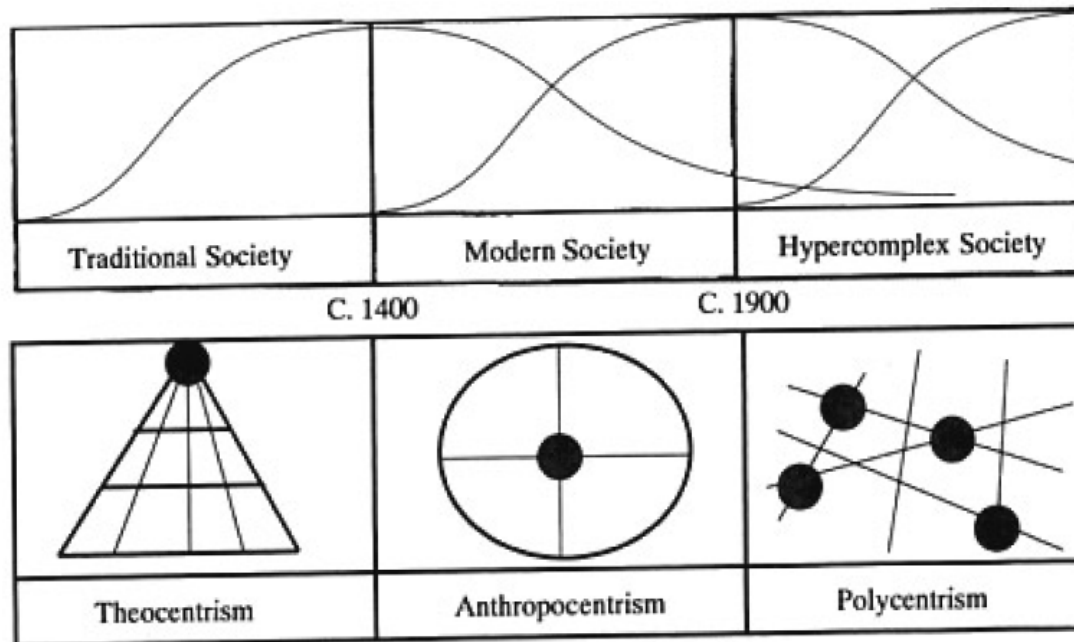
Hyper-Complex Society

Polycentricism= "many centers"
    society with many centers, many contexts, and many different basic
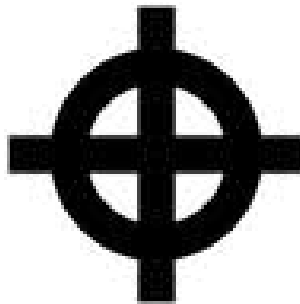   assumptions and blind spots (132);
    "Put differently, one can say that different actors find themselves in
    different contexts" (108).

Poly-contexturality = "many contexts"
    Concept derives from the work of German logician Gotthard Gunther.
    It basically means that no context or super-set of situations embeds all
    others *from the point of view of all others.***

Theocentrism   Anthropocentrism   Polycentrism