- Observation is not a neutral description of a system but an event inside the system dynamics

Observare est in catenam causarum intrare.

The record of observation is incorporated into the system.

- Observation – *non indifferens est* – for the act of observing itself alters the observed system. Whether the observing system is identical to the observed, *principi indifferens est.*

- Observation = a system interacting with another system at a shared boundary, resulting in state change.

- Complex systems have varied levels of observation capability depending on the complexity of the system.

- The observation happens at the system boundaries

Observatio omnino pura fieri non potest.

Animadversio ordinem non terminat; quod ratione non tenetur, propterea non deest.

Observation does not bring the order to an end; what is not grasped by reason is not therefore absent

De Grammatica Universa

IV

De Limitibus Observationis

(On the limits of observation)

Auctor Rerum

De Relatione Rerum

- A system can contain other systems
- Those contained systems are fully systems in their own right
- Containment does not reduce autonomy
- Containment does not imply relational constraint
- Systems do not move between system layers; A system is always, simultaneously:
    - Intra-system (its own internal coherence)
    - Inter-system (its relations with other systems)
    - Supra-system (the environment for systems it contains)
    - Meta-system (when it constrains other systems without acting as an agent)

Observatio ex complexitate systematis oritur.

- Simple systems register state but do not model it
- More complex systems register relation
- Highly nested systems can register themselves as systems

De Recursu

- Recursion is the repeated re-application of the same constraints to successive system states, where each resulting state becomes the condition for the next.

State → state → state

Relation → altered relation → new coupling

Emergent pattern → stabilizes → reconditions components

- System nested in systems but each system has a different role in the supra-system
- Complex System: all individual systems, all supra-systems of their own intra-systems
- Recursion occurs through boundaries, not despite them

Recursus reversionem non patitur.

- Recursion operates only within the persistence conditions of a system. When a limit is reached, recursion does not extend the system — it ends or transforms it.

Recursus infinitatem non implicat.

De Limitibus Observationis

- Observation is not external to the system
    - A system cannot observe without participating.
    - Observation is a state change, not a viewpoint.
    - To observe is already to be within the constraints of what is observed.
- Observation is not neutral; it is a mode of participation
- No system can fully observe itself observing - There is no position from which a system can include itself as a complete object of observation.
- Observation is always partial
- Increased complexity increases observational capacity – not completeness
    - Complexity ≠ omniscience
- Observation of the system depends on the position a system occupies inside the nest of its suprasystem but no position gives total access to the suprasystem from inside.

All systems inside the observable space ultimately belong to the same supra-system and share the same vector

Flumen est rerum ordo, in flumine sumus – extra flumen nihil est