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The Challenge of Complexity: when science focuses on society

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From being to becoming

1. Society is an *object* for science.
 - a. Like any other “object”, it needs and deserves an *ad-hoc* conceptualization in order to construct their scientific intelligibility.
 - b. There is no *scientific* foundation for a “special” science or “*social*” science.
 - i. False dilemma between “erklären” (explain) and “verstehen” (understand).
 - c. Science provides explanations in order to anticipate events.
 - i. Explanations are always limited to an specific domain of phenomena and valid for a concrete scale of analysis
 - d. Key difference between “causal relations” and “causal explanations”
 - i. CR: establishing causes and effects logically and temporally. Only descriptions
 - ii. CE: only comes from a **Theory**, that is, an *interpretation* that establishes relations and can *anticipate* phenomena.

2. To get this scientific approach we should consider society not as a “thing”, but as a **process**.
 - a. A process is a series of actions that produce a change or development.
 - b. A process is a course of dialectical action of structuring and re-structuring multidimensional set of relations. *Relations* of relations...
 - c. A process is never “observed” directly, but should be always constructed, inferred.

3. The human **cognitive complex**¹ cannot “observe” or “see” relations.
 - a. Every relation should be *inferred*, *constructed*, *created*, and **established by acting** with different, but not always *differentiated*, parts of our *relative cut o reality*.
 - b. We only interact with partial “cuts” of a determined, that means “relative”, totality.

Reality is never known as a whole.

¹ García, Rolando (2000) *El conocimiento en construcción. De las formulaciones de Jean Piaget a la teoría de los sistemas complejos*, Barcelona, Gedisa.

- c. Knowing is a complex activity in which we are constantly relating “parts” and “cuts” from our interactions with “objects”. It yields differentiations and integrations.
4. A **complex approach** is justified when we study not only “phenomena” or “**elements**” (from which we must establish and describe their *properties* and *characteristics*, that is, its specificity cut as a distinct “object”), neither when we locate this specific traits or behaviors (that we can “observe”) into a set of relations conforming a relative “**state**” that let us *understand* these properties and detailed characteristics as a *momentum* of this precise *state*; but when we are *forced* to deal with **transformations of states** along time.

This claim implies:

- a. a **huge number** of differentiated interacting elements
- b. with increasing relations of **interdefinibility**
- c. yielding a **systemic emergent behavior**: a kind of system behavior that cannot be generated by any of the components isolated,
- d. including internal feedback loops open to constant and multidimensional exchanges and flows of **social energy**.
 - i. Given the processes of constant structuring of society, any form of energy, matter or information when “entering” a society becomes a **social energy**.
 - ii. We can identify different kinds of Social Energy, depending the kind of question we raise:
 - 1. Productive energy (how society yields *value*)
 - 2. Societal energy (how society yields its own *organization*)
 - 3. Symbolic energy (how society yields *representations*)

Figure 1

	value	organization	representations
value	VV	VO	VR
organization	OV	OO	OR
representations	RV	RO	RR

5. A **methodological** challenge studying only a single (and thus partial) dimension, like **symbolic ecologies** of any society implies at least:
- a. Considering this cut as a **relative totality**
 - b. A **strategy** (that means a design, an anticipation linked to a *position taken* regarding the “object” cut (there is no *pure* objectivity). This “biased” trait comes from the very **question** (*Epistemic Framework, EF*)², the number of decisions about using different **techniques** and **methods** for constructing *empirical and conceptual information systems* that pursue a **theoretical** plausible target. In this way, methodology is not to be confused as “techniques” or “methods” unlinked to conceptual and epistemic frameworks, at least, partially *un-acknowledge*, but in process of evaluate critically its capacity for differentiate and integrate information coming from the action over the “object” and “pumped” and framed by the question and the position taken.

² In science history, the “Epistemic Framework conditions the development of theories, but it does not determine its contents. EF orients and modulates their conceptual frameworks, but it does not specify them” García, 2000: 100.