Brief Glossary of Luhmann's Terms

System: Luhmann said: "system is the difference between system and environment" (Luhmann 2013, p. 44). A system is a result of this distinction, by which an observer can assign the place of observation either inside the system or in the environment. A social system does not appear without its environment. A system can internally consider its constitutive distinction, making for itself an internal representation of the environment that concerns it. Anything in the environment that is irrelevant for system's operations is not represented inside the system.

Autopoiesis: Imported from the works of the biologists Humberto Maturana and Francisco Varela (1974) and applied by Luhmann to Social Systems, autopoiesis is the condition of existence of social systems by which they produce the means for their own reproduction. A social system either performs its autopoiesis or does not exist as a system. Furthermore, no system can take care of the reproduction of any other system. Social systems are continuously orientated towards assuring the preservation of their self-reproduction. Autopoiesis is a permanent drive, performed at each operation of the system; no system can afford to "take a break" in that regard. Where there is a social system, autopoiesis is at work at all times.

Communication: Communication is the element constitutive of social systems; the "lifeblood of the system". Luhmann's concept differs from the traditional transmission model of communication according to which "Alter" sends messages then received by "Ego", completing the communi-

cation link. In contrast, for Luhmann communication has three components: content (information), utterance and understanding. Utterance is the physical emission (sound vibration, visible printed characters, light signals, tactile braille marks, etc.), and content is the conveyed information (within a shared semantic universe of meanings). Understanding is the unit of content and utterance, and is what make possible the interlacing with the subsequent utterances and contents. Understanding includes misunderstanding. Communication allows for recursive confirmation (by which those communicating can go back to what was said and confirm or not the messages) and self-validation, interlacing past, present and future communications, stabilizing meanings and the systems that rely on them. For Luhmann, society is the totality of communications taking place, and no communication takes place outside society.

Contingent and double contingency: Contingent is said of something that could be different, i.e. it is neither necessary nor impossible. The term appears in relation to observations, selections, communications, decisions, etc., which, for being contingent, can always be different. All communications happen in a condition of double contingency, whereby both sides, while communicating, perform their own selections over what is said, listened and replied to. The selections each makes can be different and include the possibility of rejection of the communicated messages. For having the same possibility on both communicating sides, communications are therefore doubly contingent.

Closure and Operational closure: A system only deals with the information it internally produces. What is observed in the environment becomes information once the perceptions are selected and internally processed. Operational closure correlates with autopoiesis as the reproduction of a system happens within its operational closure. The selection and validation of observations and communications are prerogatives of the system, and no other system can insert information inside another system; in the same way, a mind (a psychic system) cannot put a thought inside another mind (another psychic system). If that was otherwise possible, the boundaries of the two systems would collapse and the system/envi-

ronment distinction would no longer be valid. Operational closure however allows for a system's capacity to observe itself and also observe other systems. For simplicity, in a number of sentences in this book we shortened the terms "operational closure" and used the word "closure" alone, with the same meaning.

Three types of social systems: In his grand sociological theory, Luhmann differentiates three types of social systems: function systems, organizations and interactions. Each type is defined in terms of their communicative operations. *Function systems* communications are based on specific binary codes of communications (see next point); *organizations* (Luhmann, 2018) are systems based on membership and decisions (a specific type of communication); *interactions* are short-lived systems constituted by face-to-face communications. A function system does not exclude anyone in the society and anyone can take part in its communications at some point. Differently, organizations select those they identify as members (employees for instance); and only members can take part in decision-making communications. Interactions are communication systems of two or more people in face-to-face (or virtual) meetings; once the communication is over, the system ceases to exist. Society members may take part in several social systems.

Binary codes: Binary codes are essential for building *function systems*. Each *function system* has its own specific binary code (legal/illegal, healthy/sick, government/opposition, art/not art, etc. respectively for the legal system, health system, political system, and art system). The binary codes are fundamental to each respective *function system*. No *function system* has the capability and legitimacy to use the code that belongs to another *function system*. The society does not recognize a communication stating that something is legal or illegal if such communication comes from any *function system* apart from the system of law. The words legal and illegal may be used in any circumstances but they will not carry the weight, legitimacy and consequences, if used outside a legal system. *Function systems* are thus based in simple binary codes that

nevertheless provide infinite possibilities of ramifications in increasing levels of complexity.

Structural coupling: Complementary to the concept of operational closure, structural coupling recognizes the possibility of systems observing each other, and by doing so achieve some level of coordination, while keeping their closure. In Luhmann's terms, systems organized under their respective constitutive closure do observe the others and by doing so "irritate" or "are irritated by" the others, creating expectations and reacting to other systems without losing their distinctive separation from them. *Structural coupling* is the term Luhmann uses to describe such operations; it allows for coordination between different social systems, like health and education, health and law, etc., as each system can observe the others, selecting what is relevant for it, and in the process operate in a coordinated manner as seen from an observer's point of view.

Social differentiation: In Luhmann's grand theory, the current stage of evolutionary transformation of societies' structures is characterized since the eighteenth Century by the existence of several operationally closed and differentiated *function systems*. Differentiated *function systems* (law, politics, economics, health, religion, art, media, science, etc.) create addresses whereby inclusion of individuals is open to all society members, preserving the possibility for anyone to be concurrently included to varying degrees in several function systems. Differentiated function systems strive to keep their characteristics and specificities with socially precisely recognizable boundaries between them, mainly based on their binary codes and communications. At the initial primitive *segmented* society stage, individuals were assigned to social structures by their place of birth or life. In the subsequent more complexly *stratified* societies, individuals were assigned to stratus within the society (such as castes or noble versus peasants families, etc.). In the modern societies, differentiated in *function systems*, no function system has the central role and preponderates over the others; the political functional system is one functional system among the others.

Distinctions and observations: An important turn in the development of Social System Theory is Luhmann's incorporation of the works of the mathematician George Spencer-Brown. In the *Laws of Form*, Spencer-Brown (2015) asserts the inseparability of observations and distinctions. To make observations, one needs to draw distinctions. Distinctions are forms with two sides: the marked and the unmarked. A distinction is thus a unit of difference. Observations are made according to the adopted distinctions. To carry out an observation, the observer takes the marked side, which is of interest – for instance, disease instead of health – and leaves the rest out, on the unmarked side. Observation has blind spots, which are the deployed distinctions themselves. However, a distinction can also be observed, but that requires another distinction assigning the distinction to be observed to the marked side of the new distinction.

Second-order observation: Another important reference in Luhmann's theory is the work of Foerster (2014), who conceptualized the notions of an observing system observing observers and, respectively, the distinctions they use in those observations. This includes self-observation. All social systems perform first-order observation and second-order observations, i.e. observations of observers.

Coding and programming: Coding orientates the communication. Binary codes offer the two sides of the distinctions the communication refers to, while always electing only one side, the connecting one. Programmes guide communications by conditioning the selection of themes and semantics, supporting communication connectivity with the chosen side of the binary distinctions.

Complexity: Complexity is attributable to observation; it is not an object in itself. Both system and environment have elements and relations between elements that surpass system's observation capacity. Complexity therefore refers to the unavoidable system's limits for making observations and making sense of what it observes. A system reduces complexity by making selections and focusing only on certain elements, excluding

the rest from consideration. Contingency is intrinsic to complexity, because while reducing complexity a system makes selections, which could be different. The environment is more complex than the systems.

Requisite Variety: The systems do not have the requisite variety, i.e. the necessary diversity of distinctions, for internally making comprehensive copies of its environment in all its complexities. Therefore they make selections and focus only on those elements they can distinguish. Without the requisite variety, a system leave elements and relations unaddressed.

Decision: A decision is a particular type of communication crucial for the existence of organizations. Without decision there is no organization. All matters of concern for an organization as social system are objects of decisions. A decision communicates the side of the distinctions the subsequent communications should be connected to, therefore orientating and creating the premises for the decisions to be taken next. A decision connects to another and the subsequent ones in such a way that those making decisions do not need to go back to the basis and evidences of the previous decisions; thus, decisions become premises for those that follow from them. This connectivity absorbs uncertainties, as the new decisions do not need to address the uncertainties concerning the previous ones when they were made and justified.

Uncertainty absorption: A decision already made does not have to communicate the uncertainties that surrounded it before it was taken, the ambiguities or doubts about evidences guiding the decision. A communicated decision does not communicate that it is also contingent, i.e. that the decision could be different. Once adopted, a decision thus absorbs uncertainties, which are then excluded from further consideration. The absorption of uncertainties achieved by decisions is therefore crucial for the operations of any organization.

Membership: The differentiation between who belongs (members) and who does not belong to an organization is of vital importance for any organization. All organizations are based on decisions and membership,

and only members can make legitimate decisions, or, in other words, only decisions taken by members are recognized as valid and relevant for the organization.

Paradoxes and removal of paradoxes: In Luhmann's terms, all distinctions are paradoxical for being a unit of a difference. Dealing with distinctions and corresponding observations and communications, the systems need to remove paradoxes from sight, focusing on only one side of the distinction at a time, without attending to the contrasting opposite side. Paradoxes carry the risk of preventing determinability and thus the loss of connection between communications therefore one side needs to be privileged. For instance, in dealing with the challenge of allergies and autoimmune diseases, the provision of care needs to stick to the sickness side and remove the indeterminacy of considering that the body is having a normal reaction although against mistaken factors or disproportionately. The symptoms of sickness therefore have to be treated. Iatrogenic psychiatric diseases, with aggravation of symptoms over the course of a hospital admission, may be considered another of such example. Systems' self-reference is also an example of where paradoxes must be avoided (see below the paragraph on self-reference).

Re-entering: Re-entering happens when a distinction enters one of its sides. For instance, when a system produces internally a representation of the environment (always partial) from which it distinguishes itself through the system/environment distinction. On the system side of the system/environment distinction, the system establishes a representation of the distinction itself.

Medium and form: Mediums can only be observed through forms. Forms can only appear in the medium that makes them observable. Forms consist of tight connections of the elements of the medium, while these connections are loose in a medium.

Symbolically generalized medium of communication: These are symbolic medium linking motivations and selections. For instance, the symboli-

cally generalized medium of communication (SGMC) of power, money, law, love, art and truth, among others, provide pervasive references in their respective systems, facilitating specifications and acceptance of communications. The SGMC increases the chances of accepting communications that otherwise would be highly improbable. For instance, the SGMC of power increases the acceptability of decisions enacted and respective messages emanating from those holding positions of power and recognized legitimate use of the respective SGMC.

Meaning: In Luhmann's terms, meaning is the unit of the difference between actuality and potentiality. In other words, the medium of meaning allows the creation of forms that differentiate between the actual selection and the other possibilities. The meaning of a word is the selection of an actual possibility vis-à-vis the others that remain latent and potential for not being selected.

Complexity and complexity reduction: A formal definition says that complexity is the condition of having too many elements and relations so that the elements cannot be related to all the others. The environment is always more complex than the systems. The systems observe their environment and try to reduce its complexities by selecting the aspects (elements and relations) that the system considers relevant for its autopoiesis. This is complexity reduction. Systems do not have the "requisite variety" to relate each environment's element to an element of the system. In other words, it is impossible for the system to map and represent all elements and relations of the environment. Because of that, systems have to make selections, reducing the complexity of the environment the system has to deal with. In this process, progressively, the system also becomes more complex, by refining and developing new selections. But the system's complexity has to be controlled or even reduced to avoid overburdening the communicative operations of the system and its capacity to coordinate its own elements.

Systems' self-reference: Self-reference is in the confluence of interrelated concepts, such as autopoiesis, operational closure, observation, selec-

tion and communications. A system can only carry out its reproduction internally, and the reproduction entails reproduction of consistent and meaningful communications. A system needs to distinguish, recognize and validate communications belonging to it, separating them from the others. Validation of communications cannot come from outside, therefore self-reference continuously operates with the distinction system/environment. Self-reference makes possible the identification of meanings that make sense and therefore can communicatively be reproduced by the system. Self-reference is defined in contrast with hetero-reference, as two sides of a distinction. Autopoietic self-reference does not require the system to have an exhaustive, complete self-description and description of its environment. For the self-reference, the system recognizes its limits and distinguishes what belongs to it and what doesn't. Semantic codes are deployed with symbols and signifiers the system operates with. Mistakes may happen, but the system has safeguards to keep its self-reference updated and, adjusted. The system deals with the paradoxical nature of self-reference, where referring to itself is referring to itself referring to itself and so on to infinity. To stop eternal loops the system elects an identity of the self, establishing that no further exploration is required. The patient needs to be treated and the system knows which side it has to pay attention avoiding the entanglement of eternal self-reflection in its self-reference. System's identity is crucial for system's self-observation, self-description and self-organizing. For identity construction, the system/environment distinction plays the fundamental role; what does not belong to the system belongs to the environment. The system relies on its internal representation of causalities observed in the environment as interrupters of self-referential loops. In Luhmann's (2015, p. 99) words,[1] "the system de-symmetrizes itself". To stop tautological risks of its own self-referred loops, the system creates an asymmetry, internally referring back to the representations of the environment it created itself, recognizing assumed inherent causalities of the environment (for example

1 N. Luhmann (2015), *Sociedad y sistema: la ambición de la teoria*, ed. Paidós, Barcelona.

the diseases and their causes), preserving in the process its operational closure and autopoiesis. In simple terms, the health system not only treats the diseases with meanings created by it, but also treats them according to orders of causalities the system admits and confirmed it has observed in the environment. The history of medicine shows how new causal paradigms replace the old ones.

Structural coupling of communication and consciousness: Luhmann speaks about independence of the autopoiesis of communication and the autopoiesis of consciousness, although having necessary mutual fundamental connection. There would not be communication without consciousness and vice versa. But their reproductions are carried out independently. Utterances link to subsequent utterances in the medium of communications, as well as thoughts link to ensuing thoughts in the consciousness medium. Alter do not communicate to Ego a copy of Alter's thoughts. The utterances require selections of what to say. On the other side, Ego decodes Alter's utterances with his own selections. So, Ego's thoughts are not a copy of Alter's thoughts transferred by communication. Luhmann speaks of an *orthogonal* relation between communication and consciousness. Their coupling do not eliminate their autonomy; the opposite, coupling rather requires their independent autonomous performances.