Paradox, Time and De-Paradoxication in Luhmann: no easy way out.

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(...) THE PARADOX DOES NOT PREVENT THE OPERATION OF THE SYSTEM. ON THE CONTRARY, IT IS THE CONDITION OF THEIR POSSIBILITY BECAUSE THEIR AUTOPOIESIS REQUIRES CONTINUING ACTUALITY WITH DIFFERENT OPERATIONS, ACTUALIZING DIFFERENT POSSIBILITIES.¹

This paper explores the relation between paradox, de-paradoxication and time, which I hold to be a relatively unattended yet very important tandem of concepts in Luhmann’s work.² An effort is made to think-through the re-solution of paradox through time in the process of what Luhmann calls de-paradoxication. This paradox can be expressed in the following way: cognition or knowledge of the world is impossible (because of the operational closure of the system), but absolutely necessary for structural coupling with the environment. For Luhmann, the most effective way to handle paradox is by making use of time and moving to a higher level of observation, much as Spencer-Brown does in his Laws of Form.³

The idea of paradox and of its dissolution is a constant throughout most of Luhmann’s principal works. Self-reference, meaning, communication, contingency, reduction of complexity, truth, cognition, -to name just these few-, are all paradoxical concepts. Far from being an exceptional event or form of expression, paradox can be said to be constitutive of the autopoiesis of self-referential

¹ Luhmann, Paradox of Observing Systems, in Theories of Distinction, p. 84
² Luhmann himself explores paradox in detail in the book cited in note 1. Among other authors who have treated the question in Luhmann’s theory are: Beriaín J osebio, La paradoja de la expansión de opciones en el capitalismo tardío in Revista Anthropos 173/174; Rasch, William, Niklas Luhmann’s Modernity: the paradoxes of differentiation.
³ Spencer-Brown, G. (1973), Laws of Form
systems. Furthermore, systems have to deal with paradox not as a problem of logic or reasoning, but as a matter of the operations through which they can maintain both their differentiation from their environment and their internal differentiation as the complexity of their own organizations evolve. This means that the dissolution of paradox is necessary for the system’s structural coupling with its environment. Structural coupling is a process which is carried out over time, and is possible insofar the system is able to deal with paradox. This is why paradox and its dissolution can only be carried out through specific operations which occur over time. It is this (paradoxical) theoretical relation between time, paradox and de-paradoxication which will be explored in detail.

Auto-poietic, self-referential systems are, according to Luhmann, inherently paradoxical. I will try to contribute to the discussion of the role of paradox and de-paradoxication in Luhmann’s cybernetics and the relations of these concepts with the concept of time. I argue that second order observation requires that close attention be paid to paradox and the system’s process of resolving it, and also take into account the role of time in this process of de-paradoxication.

In the philosophical tradition, especially in logics –and also in mathematics-, paradox is an obstacle to the continuation of discourse or thought. It refers to an event or enunciation which negates at least one of the distinctions which define the rules of logic (or reasoning). Of course, there are a number of very famous paradoxes, and I ask to be excused from expounding them here for reasons of brevity.\(^4\) One way of expressing its general form could be \(A \text{ is (not) equal to } A\).\(^5\)

\(^4\) Useful materials and an extensive general bibliography on paradox can be found at the Internet Encyclopedia of Philosophy at [http://www.utm.edu/research/iep/p/](http://www.utm.edu/research/iep/p/).
One of the most frequently challenged rules is probably this interdiction of a proposition and its negation being true at the same time. What interests me here is the twist which paradox takes in Luhmann’s theory. Instead of treating paradox as an anomaly or as a logical impossibility which threatens the continuation of thought or argument, he prefers to recast it as a necessary and inevitable component of the autopoiesis of self-referential systems. For him, paradox is a problem which the system must solve in order to continue its autopoiesis. Indeed, in Luhmann’s view, the very existence and autopoiesis of the system is based on (the paradox of) the unity of the distinction between the system and its environment. The system operates on the assumption that both sides remain unified by the operations that distinguish one from the other; this is emphasized by the necessity of structurally coupling of the system to its environment. At every new irritation the distinction between system and environment must be re-entered by the system into the system which takes the form of a structural change of the system. For the system each operation and each irritation which triggers it takes place in the present instant, it cannot react to something that happened in the past or that will happen in the future.

However, the impossibility of all events being registered simultaneously by the system introduces time as the succession of events. That is, as the distinction between now and before. This is further complicated by the system’s need to connect (link) its present operation with the following.

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5 These range from the anecdotic, as in the liar’s paradox to the narrative, as in Lewis Carol’s Alice in Wonderland, to very expressive instances in the arts, as in Magritte’s, Ce n’est pas une pipe or in many of Escher’s works. See Hofstadter, Douglas (1999), Gödel, Escher, Bach: an Eternal Golden Braid.
Time, which can only exist as this impossibility, becomes crucial for the resolution or unfolding of paradox which Luhmann calls de-paradoxication. The system is inseparable from its environment, it cannot exist without it; indeed, the system is the (unity of) the distinction between system and environment. What does this mean and what does it imply for further (second-order) observation of the world?

Science and the paradox / de-paradoxication of knowledge

Now the physicist himself, who describes all this, is, in his own account, himself constructed of it. He is, in short, made of a conglomeration of the very particulars he describes, no more, no less, bound together and obeying such general laws as he himself has managed to find and to record. Thus we cannot escape the fact that the world is constructed in order (and thus in such a way as to be able) to see itself.6

In the words just cited, Spencer-Brown refers to one side of the double paradox underlying knowledge of the world and science: the impossibility of a privileged perspective from where an autonomous cognitive subject can be constituted (the subject is -part of- the object and thus must observe it from within). Luhmann emphasizes the other side: how can knowledge of the environment (observed as an external world) be possible if it is inaccessible to the system.7 And yet, paradoxically, not only does the system continually construct and produce knowledge about its environment, but it must do so if it wants to successfully couple with it. (I leave aside for the moment the distinction between loose and tight


7 To avoid extensive quotations, in this paper I will be referring basically to the following works by Luhmann: Chapters 4, 5 and 6 of La ciencia de la sociedad (1996) [ Spanish Translation of Die Wissenschaft der Gesselschaft (1990) ]; chapter 5 of Social Science (1995) [ English Translation of Soziale Systeme: Grundriss einer allgemeinen Theorie (1984) ]
coupling, although it might be important for a more in-depth discussion of paradox in Luhmann; I would only suggest that a situation of tight coupling would probably pose a more difficult instance of paradox solution for the system. This is a problem that deserves more theorizing than I have given it at present.)

As is well known, Luhmann rejects and abandons the notion of a subject of cognition so dear to the Western tradition since Descartes and Locke, be it in the manner of the empirical subject (specific men or women) or as a transcendental subject (spirit, universal reason, etc.) The subject is replaced by the (cybernetic) concept of the observer and the distinction between first and second order observation. He also rejects the idea that it is the individual or the individual psychic system who knows. With his refusal to accept any kind of strong or hard ontology, he also discards the idea that knowledge, and thus science is able to mirror or represent in the mind the real world that is supposedly out there. However, at the same time, he speaks about reality, systems that really exist and empirical science.

Science is for Luhmann an autopoietic – and thus, evolving- social system of communication which organizes itself around a code which distinguishes truth from non-truth (or falsehood) or, more exactly, true observations from false ones. More accurately, science is a sub-system which emerged in the course of the evolution of society's internal differentiation, as an answer to the problem of truth. It is only when this problem becomes autonomous, i.e., separated from the authority of religious, political or other such power subsystems, that the possibility of a specialized system to fulfill this function appears. As with any autopoietic system, science operates on the basis of its operational closure and its distinction from its
environment. Also as with any autopoietic system, its environment is inaccessible to it, although it must constantly structurally couple or adjust to the environment. Although *irritations* perceived (by the system) as coming from the environment *trigger* reactions or structural adjustments by the system, such reactions are entirely dependent on the system’s organization and never on the stimulus coming from outside.

The paradox of science is immediately apparent here: how can science produce knowledge about the (outside) world, when (if) it does not have access to that world. And yet the fact remains that science not only produces knowledge, but is also able to distinguish and establish the truth or falseness of this knowledge. If it is stated as a strictly logical problem, this paradox cannot be solved: scientific knowledge cannot be possible and impossible at the same time. It would probably appear to some that Luhmann is trying to deconstruct science and scientific knowledge; however, this is far from the case.

For Luhmann, logic’s successful ambition to regulate thought and discourse does not apply to how real systems must operate: paradox can effectively paralyze thought, but is incapable of stopping the evolution of real autopoietic systems. This is so because logic is itself an emergent property in the co-evolution of systems of consciousness and systems of communication, and it presupposes systems; the inverse does not hold true: systems do not presuppose the rules of logic. Thus, there is no *necessary* correspondence between the rules of logic and the “real” world. In particular, autopoietic systems of communications (social) and of conscience (psychic) have their own ways of handling paradox, in part because, as we have seen, their very existence depend on their success in doing so.
How do autopoietic systems solve the paradoxes or de-paradoxicalize themselves? In this context paradox is not a logical matter, but a problem the system must solve for and in the continuation of its autopoiesis, and our attention must be directed to the operations of the system. Also, we must acknowledge that our procedure has to consist of a description based on second order observation of the system in question and not on an attempt to logically solve the conundrum.

We might start with how the distinction system / environment becomes the distinction inside (internal) / outside (external). The only way this distinction can be maintained if through the successful and continued re-entry of the operation into the system. It is this re-entry which allows for the (increasingly complex) organization of the system and for the emergence of its self-referentiality (self-reference with respect to the environment). However, the system must always maintain the unity of the distinction system / environment; that is to say, it must not separate itself from its environment. Structural coupling refers precisely to this unity: to maintain the distinction the system must modify itself constantly in its relation to its environment. Self-reference, re-entry and its increasingly complex organization will (eventually?) allow it to operate a distinction between events (irritations) that the system interprets as proceeding from within its own organization - that is, from its inside- and events or irritations it interprets as proceeding or coming from outside. Furthermore, in order to reduce complexity and to control the extreme contingency of the environment to which it has to couple, the system develops expectations that are allowed by the memory of its past successful operations. In this manner, the system knows how to react to familiar irritations. This is in fact what at some point in our evolution allowed psychic
systems and modern society to distinguish mind, thought or the *res-cogitans* from the world, nature or the *res-extensa*. Our senses are supposed to guarantee our access (to observe) to that outside world.

In this manner, the system is able to operate further distinctions, which allow it to observe either the *inner world* of its own mind or conscience, or the *exterior world*, that is, that other side from which so many irritations come. Or put another way, the system is able to make a distinction between the world and its own experience of the world. The system is then able to observe and also to control its observations (through second order observation, for example), to develop theories and hypothesis and ways to test them: it is able to produce not only knowledge, but also scientific (true) knowledge.

However, this *external world* which the system is able to observe is not its environment, since to this it has no access. The outside world is constructed by the system in the only way it can: by making use of its own structure and its internal organization. In this sense the paradox is resolved: the system is able to know the world outside itself although it has no access to that world, because it constructs an outside world in the process of its continuing structural coupling with the environment which forms part of its autopoiesis.

**Cognition, knowledge and time**

Cognition can only take place in the present, just as knowledge is always actualized in the present of the system which knows. However, in both cognition and knowledge a certain temporality is presupposed: that of the evolution of the relations of the system with its environment. At the level of psychic or conscious
and also of communicative social systems it is possible to speak of the emergence of the notion of *expectation* of what is supposed to happen at each new moment; this expectation is based on the memory of previous events of coupling with the environment. The negative or absence of realization of expectations forces the system to generate new ways of reacting to the irritations it perceives as coming from the environment. This relation between expectations and irritations is itself a generator of new knowledge.

There is another distinction which the system operates, according to Luhmann: that between action and experience (vivencia). More accurately: the distinction between events / experiences generated by the system’s own actions (operations) and events / experiences generated by the environment (irritations, “triggerings”). These last ones generate what an observer can designate as knowledge of the world, and it is also about them that scientific knowledge is produced, especially what is normally called *empirical* knowledge. Even though this distinction between internal and external from which both cognition and knowledge derive emerge early on in the evolution of systems operating in *meaning*, the invention of the *written word* opened new possibilities for the evolution of knowledge and cognition. Among them, Luhmann explicitly mentions the following:

- First: it makes possible the separation (the elimination of immediacy) between the individual system (be it social or psychic) and knowledge. Knowledge can be preserved in written form and thus can be liberated from its dependence on individual memory or collective tradition. New possibilities are created for the memory functions.
Second: it creates the possibility of deferring in time the communication of observations between observers. Thus communication does not have to be instantaneous and can allow for the development of methodologies of observation which further communication.

Third: writing is itself a process which takes time. It is impossible to register all characters simultaneously and each one has to be entered one by one. It provides the opportunity for slow reflection end eventually even for philosophy and theory,

Furthermore, it makes possible a more meticulous register of the sequence of events, thus allowing for a further development of the notions of time.

This does not eliminate the fact that knowledge - as a form of relations between system and environment - is always current (actualized) knowledge and also that memory (remembering) is just as important for this actualization as forgetting.

What lies behind this analysis is the idea that both knowledge and science emerge and change as a part of the co-evolution between the social system of communication and psychic systems insofar as each one serves as the environment.

However, it is important to point out that knowledge and science cannot be conflated. Science emerges at a point of the evolution of the social system when it is no longer possible to collapse truth, beauty, goodness and justice in the same subsystem, such as religion or the State. Only when the truth of observations about the world can no longer be decided on the authority of God, the monarch or some such all encompassing power does truth become a problem for the social system. The social system of science emerges to solve this problem. Truth becomes
autonomous from the other social sub-systems and a code to distinguish truth from non-truth is developed. It is around this distinction that science emerges as an autopoietic system. It is clear that for Luhmann this code is produced by the system as a function of its own internal organization and its process of internal differentiation. As the auto poiesis of the system advances, both the complexity of its internal organization (as internal differentiation) and its differentiation from the other subsystems increase. In modern societies, he says, science is the only system capable of deciding on the truth or non-truth of observations of the world.

However, as already pointed out, it is not a question of goodness of fit between scientific knowledge and the world external to the system. The world that knowledge refers to is constructed internally by the system.\(^8\) To summarize: science is an autopoietic social subsystem of communication which organizes itself around a code that distinguishes truth from non truth. It operates on one side of the distinction between internal / external. The external is that which is experienced by the system as coming from outside, what we properly call the empirical. The error or empiricism is to take the empirical for reality. There is no necessary correspondence between what is constructed as the “world” about which knowledge is produced and the environment which is “external” to the system. In spite of this, science has been able, from the distinction truth / not truth to evolve in an ever more complex of distinction-making in the form of concepts and theory development in which it creates more refined and complex knowledge about the world. It is necessary to insist on the social character of this knowledge:

\(^8\) This is one of the reasons some critics have pointed out that Luhmann’s view is solipcistic. (See for example Theory of a Different Order: A conversation with Katherine Hayles and Niklas Luhmann in Rasch, William, Niklas Luhmann’s Modernity.)
it is not the individual system of conscience that produces knowledge of the world. Scientific knowledge can only be produced in the (social) system of communication, because it is only there where the code can be applied.

**Paradox resolved?**

So, what can we say about the deparadoxication of scientific knowledge? Has the system successfully resolved the paradox? The answer to this question is obviously not simple.

We can say that the manner in which the system deals with the impossibility of access to its environment is by constructing the image of the world and then by developing increasingly sophisticated theories, methods, procedures and technologies to be able to submit observations to the code of truth. Modern science has been able to impressively expand our knowledge of the world. In this way, it operates permanently in its effort to reduce complexity. However, because there is no access to the external environment, the system has no way of anticipating each and every next event: unanticipated, contingent irritations can always appear that can force new structural couplings. In the case of science, this means necessarily the production of new knowledge. For that reason, the paradox will be present as long as the system exists, and so will be the need for the resolution of paradox by the system which Luhmann calls deparadoxication.
Reference List


