# Chapter 6 – Health Systems Strengthening and Systems Theory

This chapter discusses the horizons Luhmann's theory opens for studying health systems strengthening (HSS). For Social Systems Theory, if an operationally closed self-referential autopoietic system can be strengthened, that has to be done by the system in correspondence with its essential prerogative of reproducing itself. Therefore the chapter explores the questions on how a system can become more capable of self-reproduction, or, in other words, how it can use self-assessment to "improving".

In fact, in Luhmann's texts we do not find references to system "strengthening". In his theory, a system either performs its autopoiesis or no longer exists. A system's competence to perform autopoiesis, i.e. to produce the means for its own reproduction, is all that is needed.[1] The strengthening of a system therefore is a matter of the system's handling through communications the complexities it observes in the environment and in itself, ensuring its self-reproduction.

The chapter extensively discusses this topic, starting with a debate on how HSS initiatives can be analysed from the Social Systems theoretical point of view, with a specific section dedicated to the topic of *resilience*. Furthermore, the chapter discusses the relations between political systems and health systems, and concludes with some reflections on complexity and systems strengthening.

1 As mentioned in previous chapters, Luhmann (2013) says social systems, like biological systems, rely on the environment as a source of energy and materials, but all information the system needs is produced internally. A system can observe the environment but not get information from it; the observations are translated into information inside the system.

## 6.1 Applying the theory – health systems strengthening

This section summarizes the conceptual characterization of systems from Luhmann's perspective, identifying the crucial elements for a discussion about strengthening health systems. The paragraphs below list what can have strengthening implications in a health system.

In Social Systems Theory terms, systems strengthening should be based on a number of functionalities related to improvements in the capacities of the system to perform its reproduction, i.e. to ensure the terms and conditions of *self-reproduction* with the system managing its own *complexities* as well as the complexities it deals with in its environment. For that, the system/organization: reassures its competence for *self-observation* and *decision-making*; assures continuous internal *communication* of information generated and validated by itself; guarantees the consistency of its *internal differentiation* in sub-systems; preserves its unit at the same time as *coupling* with other systems; and strives to achieve enhanced capability to internally communicate *more complex information*.

From this perspective, strengthening a health system is conceived differently from the prevalent view that treats health systems as if they were large corporations (public or private or mixed), to be approached with managerial optics, attentive to comprehensive coordinated improvements to the "building blocks" (WHO 2007). Instead, from a social system point of view, health systems cannot be likened to features of large enterprises or "production functions", combining human, material, financial, and managerial resources. Even in organizations, as a distinct type of system (based on decision-making and membership), their systemic autopoietic reproductive dynamic does not equate to "production functions" components. Furthermore, the health system as a whole, as a function system, does not operate as an organization, although it may have many organizations operating inside it.[2]

Ultimately, in Luhmann's perspective, only the system can strengthen itself. With this in mind, we list below the key concepts of the theory for assessing the strengthening of a system.

2 In this discussion, It is important to remember that function systems and organizations are two different types of autopoietic social systems, as explained in the initial chapters.

1. *Communication* – the preservation of the on-going connectivity of the communications in the system is fundamental, preserving memory, codes, channels and utterances (including specific syntax, mediums and programmes). Information and utterances are to be maintained at the level they can be selected and understood, connecting past and future communications across the parts of the system; Particularly, and most importantly, communications related to diagnostics and treatments, key communication themes constituting a health system. Communications that are too complex to be processed or too simple – and below the level the system can deal with – are likely to be ignored, without connecting to subsequent communicative operations. To be sure, any act in a health system is made possible and becomes meaningful due to the communications that came before it, go with it or follow from it. In short, a system can only be strengthened to the extent its communications allow and are part of the strengthening process.
2. *Observation of the environment* – the system must observe its environment and for that deploy the distinctions the system makes/adopts. Distinctions need to be internally preserved as part of the repertoire/memory/identity of the system. The system needs to internally communicate the observations and selections it makes, together with the distinctions deployed. It should internally preserve and reproduce the internal capacity to select and use distinctions, perform the respective observations and communicate them. The body of the patient is part of the environment where the system deploys its observational distinctions. The strengthening of a system requires preservation of the system's acquired observational competences and the acquisition of new ones.
3. *Self-observation* – a system capable of observing the environment is also able to observe its effects on the environment and how the system itself has produced those effects; therefore such a system has self-observation capabilities. This implies that the system observes its way of producing distinctions and observations, and observes how internally it interprets (generating information) what it observes in the environment. In cybernetic jargon, such systems are capable of carrying out second-order observations. Self-observation is for instance exerted in processes such as monitoring and evaluation programmes, by which the system assesses the communications involved and therefore its own implementations. A system's competences for self-observation must be included as possibilities for self-strengthening;

4. *Handling of complexity* – Observation is also observation of the limits of comprehensibility or, in other words, observation of the limits of complexity the system can handle in the environment as well as in itself. The system selects communications and communication themes it recognizes as pertinent in line with its capacity to respond. Excessive complexity is thus avoided. This complexity reduction strategy, though, does not eliminate complex operations the system is already able to perform. The strengthening of the system should imply both the preservation of the competences to address complexities that the system has already achieved, as well as expansion of these capacity to address more complex problems, without threatening the integrity of the system. The strengthening of a system should enable it to make the necessary distinctions in assessing the levels of complexities (internal and external) it is facing.
5. *Operational closure and decision-making* – A system's observations develop from the basic distinction between system and environment (the distinction that creates the system). This distinction establishes the limits within which the system recognizes itself, preserving itself as an open system, as far as observation of the environment is concerned, and as a closed system, in relation to the generation of information – in other words, the system is open for observing the environment, and at the same time closed in its processes of internally generating all information it uses. Only information internally generated can be used for systems communication. For a system based on decisions (organizations), decision-making is its exclusive prerogative; only decisions it makes itself are recognized as belonging to it and therefore considered valid. In this sense, the recognition, acceptance and incorporation of rulings coming from the political and the legal systems become possible by internal deliberative processes in correspondence with external norms. Strengthening a system therefore means improving its operational closure; the contrary will lead to the destruction of the system.
6. *Autopoiesis* – As mentioned several times before, a system either performs its autopoiesis or no longer exists. Communication is the base of social systems autopoiesis. The system has to generate, control and maintain the communications it recognizes as belonging to it; in doing that, it carries out its autopoiesis. Just as a reminder, autopoiesis is the reproduction of a system using the means it creates itself. A function system like health also communicates about the generation of the competences for and the validation of communications. By doing that, the system reproduces the

conditions to continue producing communications in a consistent manner. Strengthening a system should therefore mean the same as the system making itself able to continuing its autopoiesis.

7. *Differentiation* – What defines a system as such is the system/environment distinction. A system is identified as differentiated from its environment, including all the other systems in it. The differentiation of a system's domains comes with the system's prerogatives of applying its codes and programmes the way it decides. This creates self-reference (the system referring to itself) and its opposite, hetero-reference (the system referring to what is not it). Besides this differentiation, a system may also establish internal differentiations, by which it creates internal sub-systems and, by doing so, the system improves the handling of complexities. A system's internal differentiation may enhance operational competences and internally stabilize patterns of communications linking internally differentiated subsystems. Internal differentiation therefore equips a system with operative sub-systems with specific purposes for handling specific aspects of its autopoiesis, releasing other parts of the system from the same concerns. This increases and simplifies the processes of selection and, crucially, acceptance of communications. An example may help to see this apparently difficult conceptualization. For instance, the works carried out by professional councils ensures that the professional standards of communications (and related actions) are monitored and maintained. The healthcare service delivery components do not need to do the normative work the professional councils do. As another example, the health system differentiates health specialities and in that way gains in capacity to address the complexities of each speciality field, selecting and orientating cases within the system in a way that reduces complexity; thus, the system also allows for enhanced complex performances in specific areas of the system, without overburdening the whole system with generalized complexities. For instance, these internal differentiations increase the probability of acceptance of communications taking place in the field of the specialities, which would otherwise overburden the system – a specialist in internal medicine and infectious diseases may not be able to talk about the effects of radiotherapy, for instance, but that would not constitute a problem for the system. In short, strengthening a system requires continuous handling of the differentiations by which the system distinguishes itself from other systems and its environment, and distinguishes and manages the internal sub-systems.

8. *Meaning and contingencies* – As communication-based systems, social systems operate on the basis of meaning and contingencies. Luhmann uses a formal definition of meaning as the unit of the actuality/potentiality distinction (the meaning of something is fixed in contrast to the sets of other potential meanings that it excludes). On the other hand, contingency means that things are neither necessary nor impossible, and therefore can be different. Meanings are contingent, therefore they can also be different; in consequence of that, a system needs to consistently preserve relevant meanings. This is achieved by memory and the connectivity between past, present and future communications, thus preserving the communicated meanings. A recursive process of communications within the system, clarifying and certifying that messages have been well understood (or not), also contributes to stabilize meanings. Stability relies on the possibility of going back retroactively to clarify whether the intended message was understood correctly. Strengthening a system therefore requires the enforcement of reliable mechanisms of recursively checking meanings as well as the correctness of the selections made for constituting and connecting them. On the other hand, contingencies need to be contained so that the idea that meanings could be different have to be avoided by resorting to mechanisms that reinforce the adopted meaning. For instance, resorting to the opinion of a high-qualified board of experts on the matter, conferring even an ethical dimension to the acceptance of experts' opinions. So, in its internal differentiation, a strengthened system elects mechanisms for reducing contingencies and preserving meanings. Strengthening a system implies therefore making the system increasingly able to manage its contingencies and preserve the meanings it works with.

Having said that, it should have become clear that from the Social System Theory perspective, system strengthening couldn't be judged in the same terms of managerial, governance or economic evaluations. The autopoiesis of a system cannot be thoroughly translated in terms of the indicators used for such evaluations. For instance, developing new expertise is not necessarily a matter of cost-effectiveness, efficiency, equity, good governance, profit-maximizing and so on; it is first of all a matter of acquiring competences in areas of communications with responses to new problems not yet incorporated into the system, and the system considers that it has to do something about.

The strengthening of a system does not mean the system has become more efficient, more effective, more equitable, less costly, more profitable, or has

generated higher revenues or higher monetarily expressed benefits. All of that may happen and still the key aspect of the system is its self-reproduction by the means it produces itself. Similarly, successful though highly improbable biological organisms or species may develop features that are neither necessary nor efficient to survive in their environment, but they become reproductively possible and are carried forward. There is no necessary cost–benefit (or cost-effectiveness or efficacy, etc.) justification for keeping an autopoietic system alive. In the context of its autopoiesis, a system cannot plan to stop it – that would be a paradox; autopoiesis cannot incorporate a self-destruction aim. Any communicative operation that is incorporated and belongs to a system by definition concurs for a system's autopoiesis, therefore anything aiming at the destruction of the system is not recognized as belonging to the system and consequently is not incorporated in it. The environment may produce such things that constitute risks the system needs to avoid. And indeed the theory recognizes the possibility of the annihilation of a system. Preserving autopoiesis is therefore a paradoxical option between remaining alive or dying, which in other words means that these are not real options for any system, as in its autopoietic drive a system cannot decide to self-destroy. Autopoiesis does not foresee such a possibility.

This discussion is not immune from controversies. However, the message the theory brings is that the enhancement of the capacity of the system to reproduce itself by its own means is what strengthens the system, not its adaptation to external assessment indicators.

External guiding principles for system strengthening may become normative prescriptions for those applying HSS in a given country. The normative principles may carry ideological orientations, whereby the proponents set the parameters for judging a health system based on programmes developed elsewhere. For instance, principles orientating health sector management, prescribing standards and/or promoting views and values that became possible in other contexts. However, this may put in front of the country's system an ideological, normative and doctrinaire mirror in which the system may not see itself. It may see only a distorted image that does not account for the actual functionality of the system as seen from the perspective of those who are enabling its existence, participating in its reproduction, articulating resources, policy mandates and decisions. This illustrates potential frictions between external experts and those internally operating a system in a given country.

## 6.2 Applying the theory – resilience

Resilience is a term often used in discussions about health system strengthening. The term denotes a desirable quality of health systems by which the system is endowed with the capacity to endure adverse circumstances as well as "bounces back" from disruptive occurrences such as epidemic, wars, natural disasters, etc. Resilient systems are considered able to maintain or even improve their operations while facing important unpredictable challenges.

However, there are different views. The article "From Bouncing Back, to Nurturing Emergence: Reframing the Concept of Resilience in Health Systems Strengthening" by E. Barasa, K. Cloete and L. Gilson (2017) proposes to treat resilience in reference to complex adaptive systems (CAS), therefore countering the narrow understanding of resilience as "bouncing back" from shocks, expanding it to what the authors call "everyday resilience", independent from sudden distresses, incorporating CAS attributes of "absorptive, adaptive and transformative strategies".

This section argues that the debate about resilience would gain in clarity with the use of concepts from the Social Systems Theory. First, the term resilience, although currently conveying positive connotations of a characteristic that assures the continuity and the efforts of the system to improve, it does not eliminate negative connotations. Bad habits are also resilient. Old processes and practices are hard to change once they have proved to be effective as responses to what were at some point the on-going circumstances. The strong emphasis on the positive side of resilience, like many concepts commonly used in international health, such as "participation', "empowerment", "governance", "ownership", "change", "accountability", "political commitment" etc. does not eliminate negative possibilities that the same terms can refer to. The positive undertones with which these terms are used do not eliminate accounts of the same phenomenon without the normative positive meanings they are one-sidedly dressed up in.

Terms that suggest a possible black or white (good or bad) characterization in fact obfuscate the variations and nuances of the actual phenomena being observed. With widespread use, the terms may become loose and poorly specified or, at the other extreme, over-specified and thus with too narrow and rigorous a meaning to be useful. On the loose side, determination becomes non-specific, and therefore the terms are abandoned and replaced by newer also vague ones. Internal accountability, for instance, is also important in informal, corrupt, mafia-style criminal organizations. Because of that, the use

of these terms needs additional qualifications, which narrow down and tailor them to the specific context they refer to. Therefore, in order to speak of resilience, it is necessary to be clear on what one is specifically talking about in each context.

The term "everyday resilience" muddles the indeterminacy a bit further. How to distinguish between the daily undertakings that effectively represent some sort of resilience, understood as continuity in the face of adversity, and undertakings that have difficulties and barriers that most undertakings usually have? Conditions are hardly perfect, whatever the level of requirements. Where can the line be drawn? How high should the uncertainties and threats become before the word resilience can be applied? Surely, health professionals who on a daily basis have to cross battlegrounds to reach their facilities demonstrate incontestable resilience. But these situations are very unusual. The proponents of the term seem to be referring to simple daily difficulties rather than dramatic extremes. But then, why not just call the professionals dedicated instead of resilient? Assisting women delivering their babies at night, using torchlights because the maternity hospital has not paid the electricity bill can be proof of dedication and willingness to work in difficult circumstances; is it necessary to call that resilience? Do health workers identify themselves with the adjective "resilient" or do they prefer to refer to themselves as dedicated, persevering, motivated and willing to do the job, without any connotation of endurance in face of adversity? This is a question in need of an empirical answer.

Moreover, the concept of autopoiesis in Social Systems Theory could be inadvertently likened to resilience, but that would not be correct. Autopoiesis means the system is reproducing itself by the means it creates itself. Besides that, a system that does not perform its autopoiesis ceases to exist. Autopoiesis has to go on whether the system is resilient or not, and the system has to reproduce itself by the means at its disposal, whether that implies resiliency or not.

The advantage of the concept of autopoiesis in relation to resilience is the fact that the system is always reproducing itself in whatever condition it is. If it stops, it dies. The concept calls attention to the mechanics of reproduction, and the role of communication in the process. The reproduction of the system is the reproduction of its communications. A system may carry on making the same mistakes and mistakenly communicate about them. Even though it will still reproduce itself and carry on with its autopoiesis. Therefore, what needs to be understood and analysed are the communications by which the system is

reproducing itself. Resilience is not a satisfactory or helpful concept for studying these reproductive processes.

## 6.3 Applying the theory – the political and health systems

This section gives only a brief explanation of the political system's functions as seen from the Social Systems Theory point of view; this is just a summary of the conceptualization. Among the advanced topics covered in the Annex of the book, there is a section dedicated to relations between political and health systems. The text discusses power and the political system, complementing the theoretical views on the political system with notions about how power as a medium of communication works.

By following the previous discussions in this chapter, the understanding that the strengthening of the health system does not require the interference of the political system may have already come to mind when we discussed the prerogative of the health system to strengthen itself. We do need to take into account that the field of health policy is consolidated in the overarching umbrella of the public health subsystem. Health policy studies are predominantly concerned with the operations taking place in the political system, and how its decisions play a crucial role in shaping a health system. The studies scrutinize a plethora of potential players (many outside the health system) having a say in the public arena, affecting the final rulings. There is no way of denying the role of those players in shaping agendas and the outcome of the political debate. What we nevertheless still need to reflect on is the differentiation and the distinct closure by which the political system cannot be part of the internal communications of the health system. The coupling of the health and political systems is a very special subject in the application of the theory, particularly in relation to health systems strengthening.

In other words, the political system cannot participate in the communications inherent to the health system. The political system does not have the required competence to generate health communications and does not have the legitimacy to do so. Yes, as noted above, decisions taken by the political system can have high importance for the health system, but the operation of the health system, for instance communications about diagnostics and treatment of patients, is not a matter the political system can communicate about. There is a lot to unpack about these points, but as mentioned, these discussions are

partially covered in the Annex, within the limits of the introductory scope of this book.

## The political system

This brief presentation of Luhmann's description of the political system is intended to contrast the two differentiated functional systems: health and politics. The political system is of crucial relevance for health systems relying on public budgets as well as for any health system depending on political enactment of the legal regulations under which the health system operates. However, it is important to keep in mind that both are *operationally closed* systems pursuing their own autopoiesis independently.

Luhmann dedicated great deal of his efforts to describe the structure and functioning of the political systems. He wrote a number of books, book chapters and articles explaining how the system theory explains political systems. Again, in this book we cannot give the full breadth of his efforts, but the main lines of his thoughts are briefly explained:

1. Political systems have an internal differentiation and are composed of three partial systems: the political, the administrative and the public.
2. The life of a political system develops as couplings and de-couplings of these three partial systems.
3. Rather unusually, Luhmann's definitions of politics (as the executive exercise of political debate and pressure over areas of interest), the administration (combining the translation of politics into legal instruments and decisions as well as operational plans in correspondence to deliberations coming from the political sub-system), and the public (as not only public opinion but public voices that have political effects, influencing both the administrative and the political systems), has steered controversies. Luhmann's scheme does not neatly map out the usual separation between the three powers: executive, legislative and judicial;
4. As a function system, among all the other function systems, the political system does not occupy the centre of society.
5. The function of the political system is to produce *collectively binding decisions*.
6. The political system is mobilized to make decisions on issues concerning other function systems. When the political pressure finally rises to the point of forcing the system to act, the political system performs the processes of consultation, discussion, deliberation, and so on, and eventually

issues legal ordinances that are *collectively binding*. Collectively binding decisions is what justifies the existence of the political system.

7. The legitimacy of the political system is a never-ending concern for the system. It has to continuously confirm its mandate to produce collectively binding decisions that are accepted. Its legitimacy is constantly in need of confirmation to secure the acceptability of its decisions. The pursuit of legitimacy is what drives the recurrent coupling and de-coupling of the political system.
8. The political system is orientated by the binary code government/opposition (or government/governed).
9. Operational closure as seen in the other function systems is also characteristic of the political system, which communicates internally (among the three differentiated partial systems) in terms of its binary code, within the semantics that concerns and is related to the code.
10. The political system cannot perform operations inside any other function system. Despite the fact that the political system (particularly in welfare states) is constantly called to resolve the problems of other function systems (economy, health and education for instance) it has no capacity to do what is the prerogative of other function systems. That brings incessant stresses to the political system that, when possible, tries to avoid getting involved with other systems' problems.
11. The political system has a particular coupling with the legal system as the political decisions taken in the medium of power needs to be formed in the medium of law and then be incorporated into the operations of the legal system.
12. The legal system therefore realizes for the political system what it would not be able to achieve alone.

For those interested in knowing the political system better from the point of view of Luhmann, some of the key references are: Luhmann (1990), *Political Theory in the Welfare State*; Luhmann (2014), *Sociología Política*; King and Thornhill (2003), *Niklas Luhmann's Theory of Politics and Law.*

For our discussion, it is sufficient to note that the political system can have positive as well as negative effects when it comes to contributing to strengthening health systems. We are not talking here about the managerial/entrepreneurial or business dimensions of the health sector. We are talking about the health system as a communication-based autopoietic social system. Any influences that may reduce the capacity of the health system to

perform its communication prerogatives affects it negatively and reduces its strength.

## 6.4 Applying the theory – complexity and health systems

As a last point, we address complexity. Complexity and complexity reduction are prominent concepts in Luhmann's theoretical architecture. The reader may have already noticed that complexity is a recurrent theme in this book. It is necessary to return to it often. The concept has been briefly explained in Chapter 2, and this brief section discusses complexity in health system in relation to system strengthening. How do health systems address complexities? And what are the effects of it in terms of system strengthening?

At the intersection of complexity and system science a range of questions arises on how systems respond to complexity in their environment and how the systems deal with their own self-observed complexities. First it is necessary to be clear that complexity and systems are two separate concepts. Complexity should be understood in reference to observational capacity. In this sense, complexity is not an ontological entity but rather a characterization deployed in observational processes, dependent on observational capacities to distinguish elements and relations between elements.

Complexity reduction and its opposite, complexity enhancement, can be observed and attributed to both sides of the system/environment distinction. In other words, complexity changes can be identified in the system as well as in the environment, within the limitations of the observer.

While the system itself has to become more complex in order to deal with the complexities it observes in the environment, the environment apparently becomes less complex. But that is only in the eyes of the system. In itself, the environment remains as complex as before. But it may also appear to become more complex, because the system starts to distinguish features in it that it was not able to see earlier.

That is simple to grasp if we consider as an example that medical equipment using magnetic resonance opened a perspective for scrutiny previously unseen. In that, we can say that both became more complex: the system, for being able to perform more sophisticate examinations, and the environment, as it now displays more diverse pictures of the examined tissues. In any case, complexity always refers to the capacity of the system to observe and the pictures it correspondently makes.

In previous chapter it was mentioned that a system does not have the "requisite variety" to represent the complexities of the environment on a one-to-one basis, meaning that the system cannot make inside itself entire copies of its environment. Systems are surely less complex than their environment. In consequence of that, health systems will need to constantly progress in their endeavour to know, identify and successfully prevent or treat diseases (new and old ones) appearing in the environment.

Diseases become more and more complex in correspondence to the system's competence to know and deploy increasingly complex ways to deal with them, looking more deeply into the details of the transformations the diseases bring about in bodies. Some authors, Bruno Latour among them, go a step further and say that new observation capacities create what then becomes observable – the microscopy created the bacteria. Social Systems Theory does not go that far. More precisely, the system strives to enhance its competence to collect new elements from the, so to speak, "limitless inventory" of known and unknown complexities of the environment.

By the same token, in enhancing its competences to investigate and treat diseases, the system also acquires complexities (multiple specialities are, for example, a good indicator of a system's complexity). A disease, the complexity of which is beyond the level of knowledge available in the system to identify and treat, will remain unrecognized, ignored or misrepresented.

In conclusion, strengthening is a matter of internal evaluation by which the system assesses whether its capacity to address the complexities it observes has increased. However, we can admit that there is another perspective: strengthening can be a judgement of the transformations the system has gone through; judgements made by external observers interested in seeing whether certain communicative competences have developed and can be found in the system. These are two different perspectives. Still, strengthening in both perspectives has to have expression in the communications capabilities of the system.