Chapter 9: Advanced Theoretical Topics

In this chapter, we address advanced discussions on Luhmann's theoretical approach to self-reference (Luhmann, 1990) and other topics, reflecting on how the concepts contribute to our discussions about health as a social system.

Decision, tautology and paradox

Although this topic may sound too abstract, we invite the reader to enjoy, if possible, the humour between the lines.

It may sound rather obvious, but it is worth noting that medicine cannot negate the distinction (healthy/sick) on which it developed. Likewise, public health cannot dismiss its fundamental distinction (at risk/not at risk). However, the self-references of both sub-systems do not require them to reflect on the validity of those distinctions. They can be problematized outside the health system by an observing system such as the scientific system or in philosophical discussions. Surely, though, the health system does not need to challenge itself that much; it does not need the instability generated by shaking its own foundations.

However, as we are in an observing system, a few epistemological reflections may illuminate the scene. More than a factual portrayal of the reality of the world, a distinction, any distinction, such as health and sickness, is attributable, recognizable and certifiable through communications.

Distinctions are essentially communicable. They also are logical operators with mutually exclusive opposing sides. That is the "nature" of distinctions.

However, between the attributions made by the distinction while being communicated, and the reality of what is communicated about, there are spaces of indeterminacy and gaps. A doctor using the four humours scheme to communicate observations could be understood and accepted in ancient times, but not in the eighteenth century, although the diseases could still be the same. The basic distinction healthy/sick is still the same, but the ramifications on the connecting side (illness) have grown progressively complex with the addition of increasing numbers of ramifications.

The fundamental distinction nevertheless is kept throughout an infinite number of communication operations, preserving its validity intact. The communications not only keep the distinction alive for the communicative operations but also admit it as valid and the very reason for the occurrence of the communications themselves.

We can venture an apparently complicated sentence: we can say that communication happens because communication communicates the reason and basis for communicating. Medicine (as well as public health) established its sovereignty to decide the validity of its communications. Doctors throughout their training, at any historical stage, acquire the role to communicate about diseases and also communicate about the validation of medical communications.

A medical communication is thus considered valid if a doctor says the communication is valid. For those allergic to tautologies, this statement may trigger a reaction. Yes, a tautology is indeed established.[1]

The same with the tautology "I decide as I decide". If we like, we can further expand the sentence into: "I decide without being subordinated to my decision because I myself made that decision in the first place". An

1 In his book *Essays on Self-Reference*, Chapter 7, "Tautology and Paradox in the Self-Description of Modern Society", Luhmann (1990) presents his views on the topic. Our discussions in these final remarks are based on that chapter.

individual makes a decision and then no longer feels bound by the decision because that person has made the decision. An example is someone deciding to go on a diet but not being bound by that decision because they made it in the first place (a good excuse). This can be further expanded into: "if I am subordinated to my decision I am not sovereign enough to make it. I can only be either sovereign or subordinated, not both".

This play on words tells us that, worse than a tautology ("I decide as I decide"), the tautological entanglement can further develop into a paradox ("If I am subordinated to my decision, I am not sovereign enough to follow it never mind make it"). The well-known example of tautology: "this sentence is a sentence", and of paradox: "this is not a meaningful sentence", helps to illustrate the difference.

"The decision is a medical decision because I am a doctor." This example seems to tell us that we can live with a tautology, because it does not prevent operability. We can continue; a medical decision can be made and accepted as such. While a paradox (such as "a medical error is not an error because it is not medical"), even a solvable simple one such as this, has paralyzing effects. Paradoxes have to be somehow solved before action can proceed.

Going back to tautologies, we can say that "the tautology – medicine is what medicine says it is" can be an acceptable statement. The tautology reveals the closure of the medical semantics we have talked about at many points in this book. We may even venture here to say that the tautology brought about the closure of medicine; it was only after medical doctors became aware and fully accepted the tautology that medicine achieved its fundamental closure and therefore its self-reference. This process can be observed in many other fields of knowledge, and indeed in public health too.

So, self-reference is rooted, surrounded, entrenched in tautologies. Let's accept therefore that health systems can tautologically preserve their operability, maintaining that "the health system self-refers to itself because it is the health system"; furthermore, "only the health system can refer to itself as a health system while no other system can do that".

We can get a bit dizzy in this "house of mirrors", but we can find our bearings and do not get lost. This is because, still, we can remove the tautology from sight, avoiding the feeling of hopelessness that accompanies the tautologically provoked allergic reaction.

In fact, self-references are always constructed with elements and relations collected from realities. The meanings constructing self-references can avoid the recurrence of the tautological statements by focusing on the selected elements and relations. We need to talk about health and the health of citizens, and treat them, don't we?

Luhmann (1990, p. 127) says: "In a very general sense, systems avoid tautological and paradoxical obstacles to meaningful self-descriptions by 'unfolding' self-reference. […] circularity of self-reference is interrupted and interpreted in a way that cannot be accounted for." The paradoxes and tautologies have to remain latent, observable only by external observers, such as examiners of PhD theses.

Notwithstanding, the health system is strongly attached to the narrative public health constructs with its selected meanings. The health system has plenty of narratives for "self-description"; therefore it does not need (or have time) to look at the mirror and state, "I am a self-referred system". Despite the fact that it is indeed a self-referred system, it is better to focus on public health's constructed narratives, and remove from concern the fact that the narratives are contingent and therefore the system could have formulated its identities differently. Regardless of such existential conjectures, the queues and waiting lists of the hospitals and health centres keep growing longer.

Luhmann calls our attention to the meaning of meanings. Social systems operate with communicated meanings, which constitute the only "building block" of any social system. He defines meanings as the unit of actuality and potentiality. This means that a meaning has an actual selected definition (actuality) from the complexity comprehending all other possible definitions (potentialities).

Meanings are contingent. They can be different; "they are not necessary or impossible", and that is so because meanings emerge from com-

plexity.[2] Where meanings are embedded in complexities it makes them contingent; there is always a surplus of possible denotations to choose from. In a sea of moving, submerged meanings, one of them will manage to temporarily stay on the surface and be selected.

Nevertheless, public health has a duty to fulfil. As an autopoietic subsystem it has to preserve and reproduce its codes with the means it creates itself. It has to tell what the health system is. The narratives have to be plausible and understandable. They have to be operative and prescriptive, and even, if required, presented in a legal and normative format. They need to be implementable and have observable results. They have to address the population (society) concerned, and optimally make possible for the population to see itself reflected in the presented narratives. The survival and reproducibility of public health rely on the accomplishment of these requirements.

So the stage is set and the play will unfold. The audience is out there waiting to hear what public health is going to say about the health system and the health of the society. Public health cannot simply go up on stage and state: "I am the only voice of the health system". That would not be enough. A voice that says it is a voice is only stating the obvious.

Studying self-reflection

In this section we also focus on the self-reference of health systems and particularly public health. The idea is to suggest that future research topics examine more closely the realization of self-reflection in practice.

As we have said at a number of points in this book, including in the previous section, public health has the attribution to explain the health system to the health system. Public health uses concepts and indicators for that.

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2 In Chapter 6 of this book, in the section "Meanings and complexities: what the theory tells us", there is a presentation of the topic of meanings and complexities, where the reader will find more detailed information.

However, in the last two decades a number of attempts have been made to describe the health system as a system. These initiatives originated from academic institutions and international organizations such as the WHO.

Thousands of articles can be found in the literature on topics such as strengthening health systems and health systems thinking. These efforts were intended to make available to the health systems of the world conceptualizations of health as a system and how that could be incorporated into the way the health systems could look at themselves. The intention was and still is to provide a conceptual arsenal with which the health systems could develop some sort of self-reference.

However, the success has been very limited because the references still lacked the key orientation to focus on self-reference per se. To describe the health system as a system, public health needs to develop a self-referential description where it sees itself as a system – a subsystem developing self-narratives as a system, and aware of that. This sounds like a quite demanding task, doesn't it?

In their Ministries of Health (or similar institutions), public health departments all over the world have been developing the self-reference of their respective health systems. We have said this a number of times in this book. The remaining issue nevertheless is that those self-references made with public health indicators have a "blind spot", so to speak. The public health department represents and constructs narratives explaining the operations and problems of the health system it looks at. The department makes pictures of the internal environment of the system (with indicators about production of services, productivity, costs, efficiency, internal organization, and so on) and makes pictures about the environment where the system operates (coverage, epidemiological profile, achievements of policies and programmes, community participation, and so on).

Those pictures can be comprehensive enough for the aims of the health system and for its capacity of dealing with complexities. But the "blind spot" is still there, if we can find it.

The academic efforts to describe the systemic features of the health systems have not got very far while applying the frameworks found else-

where in other fields. The exercises have not been comprehensive and were only tentative applications of imported frameworks to specific details of the operations of health systems.

Those theoretical frameworks were not developed enough to incorporate the crucial theme of self-reference. The results have always been expressed in simple narratives of external observers (mostly academic institutions). As far as the internal processes of health systems are concerned, there are no examples of explicitly self-referential descriptions, expressing full awareness of the systemic features. Surely, the health system's narratives are still self-referential, from internal and external perspectives, as representing portrayals of the system as the system sees it. However, almost always, those narratives are not recognizing and acknowledging that it is the health system talking about itself.

Costa (2023) offers extensive discussions on the frameworks used for systems thinking, including those proposed by WHO (2007) in *Everybody's Business*. In that book there is a section dedicated to the groundbreaking *six pillars* framework. The argument is that the scanty theoretical references were either narrow or did not see systems as such, or both. The *six pillars*, for instance, deals with health systems as if they were large enterprises; in this sense it employs notions developed in management science about five decades previously, with the same functions renamed using health-related titles. Let's say, the *six pillars* talks about: (1) medicines, vaccines and technologies; (2) health information; (3) health service delivery; (4) health workforce; (5) leadership and governance; and (6) financing. Obviously these pillars were analogous to, respectively: technological composition; information; production and selling of products; labour; management; and finance. Management science had already established that decades before. No notion of system informed such understanding, never mind systems' self-reference.

The "blind spots", we can now say, is in the selections ministries' public health departments have made for the illustrations of their health systems. The selections separate what the departments want to portray and what they prefer to leave aside, in the shadows and out of sight. Rarely, or maybe never, do the departments take the initiative to acknowledge their selections as selections of a self-referential system that can only operate

with its selections. Selections are made but the act of making them does not need to be told in the narratives.

The observers separate themselves from what they observe. In order to carry out observations, the observer stays in the "blind spot" as the author of the selections and distinctions deployed in the observations. The observers can either observe themselves using distinctions and making selections (second-order observation – observation of the observer) or observe with the deployment of distinctions and selections (first-order observation).[3]

Nevertheless, the system is not required to expose its self-references to that degree. Therefore, self-reference is not revealed as such. What has to be revealed is what can be presented as concrete reality, not as choices that are contingent and could be different. Reality has to be acknowledged as real, not a matter of choice.

Interestingly, Luhmann (2015, p. 45) says "los sistemas, en su autotratamiento, desarrollan formas de aprehensión de la complejidad no accesibles al análisis y simulación científicas"[4]. In our understanding of this statement, the health system, through the public health sub-system, is capable of assessing aspects of itself that external observers from the scientific/academic system would not grasp or analyse, as the observation horizons are different.

However the health system does not yet speak the language of systems, and maybe does not know how and why it should talk about itself as a system. The health system (meaning the public health department

3 The observer can also observe the selections and distinctions used, but that is second-order observation – observation of the observer observing. In second-order observation the observer sheds light on "blind spots" and recognizes them. For that, however, distinctive distinctions suitable for applications at second-order level of observations will be needed. Nevertheless, "blind spots" can never be ruled out; they are unavoidable and necessary for observing at any level of observation.

4 Our literal translation is: "the systems, in their self-reference, develop forms of apprehension of the complexity that are not accessible to scientific analysis and simulation".

we have been talking about) does not see itself in terms of systems operations, or even as a sub-system concerned with its own self-reference. In fact, neither external nor internal observers see the system; they see the internal and the external reality they construct, and make sure that the fact that the constructions were their own remains in the "blind spot". So they do not see the self-referential system. Not yet.

Social differentiation, form of problem and complexity

In Chapter 2 we mentioned that the differentiation of health as a social system was built from within the health system itself, with medicine first and public health joining in and carrying on the reproduction of the meanings. We may also repeat that medicine built its differentiation by sticking to its medium, the human body, and to the orientation of its problem formulation about diseases, their causes and treatments.

Luhmann (2022, p. 84) says: "the discipline [he is talking about sociology as scientific discipline] most general semantic point of reference is not its title nor the most general form of its subject matter, but the problem formulation that constitutes the discipline". In the case of sociology, the fundamental question would be "how is social order possible?" He proceeds by saying that such a question already admits and does not doubt the existence of social order. The question is thus asked within a certain social order that makes it possible and meaningful to raise such a question. In this sense he speaks of a question that has been already answered because it takes the existence of the topic for granted.

But in the same text, in relation to the same fundamental question, "how is social order possible?", he talks about *unanswerable questions* at the root of scientific disciplines. As such, these are questions that can be asked again and again, focusing each time on nuanced differences and new specific themes. These questions can make the scientific endeavour withstand, continue and progress, remaining actual and valid. Enduring questions as such are advancing scientific knowledge.

We may say that similar questions are asked in relation to medicine and public health as scientific disciplines. The questions could be: "how

is individual health possible?" and "how is population health possible?" Surely these questions can be formulated where experience of such a thing as "health" is individually and collectively already recognizable. We therefore may say that these problem formulations constitute medicine and public health as scientific disciplines, looking for answers that to some extent have already being devised and experienced. Nevertheless, in face of new patients, new diseases, new risks for collectivities, these questions have to be permanently actualized and respecified

The form of the problem – that is, the form of the question – a repeatable formulation, can therefore sustain the whole edifice of a scientific undertaking, promising an answer will eventually be found. In Luhmann's (2022) terms, the progress of a scientific enterprise is maintained by unanswerable questions – questions that also do not argue about their fundaments (social order, as well as individual and population health, are already assumed to exist or be possible; and are unquestioned fundamental preliminary answers).

Medicine made its closure around its fundamental question; driven by the complexity medicine itself was disclosing, dealing with and paradoxically expanding. The problem (the unanswerable question) is the way the complexity is brought to the table and served in adequate digestible portions. Let's now talk about complexity.

In the history of medicine the will to know and the will to improve were omnipresent. Making these orientations permanent and possible, there was also the will to communicate, about what was being uncovered and about the results of treatments; in other words communications about the formulated questions and the provisional answers.

And there were always complexities – complexities of the subject being observed: the human body and its diseases. Complexity is the attractor, the inexhaustible source of things to be known, things seemingly waiting and "inviting" to be known, uncovered and revealed: the complexities of the mysteries of life itself.

It is clear though that we are talking about systems of meanings, not transcendental essences or ultimate truths. The complexities of the human body and its diseases had to be represented, translated into mean-

ingful communicable statements inside the semantic universe medicine has been working on and continuously rebuilding for itself for centuries.

The questioning about health has been incessant, as has been the attention to the symbolic medium, the human body, which also has continuously manifested a huge variety of diseases, in apparent unstoppable and largely unpredictable fashion. Therefore, so much has had to be learned! There is so much complexity to address! And communicate about!

These open complexities in the medium medicine observes, the human body, capture medical attention and efforts to construct semantic representations inside the also increasingly complex universe of medical meanings.

In other words, complexities have been growing on both sides – in the external environment where the complex object is continuously explored, and internally, where the apparatus of communicative structured semantics communicates about the represented complexities. In Luhmann's words:

> „We assume that complex systems are able to develop and maintain a system-specific order only under the condition of a higher level of environmental complexity. In this sense, a kind of ecological complexity pressure is not only the origin but also the operating condition of complex systems." (Luhmann, 2022, p. 89)

Complexity is thus productive and generative; it multiplies its horizons, expanding in many directions. It provokes, keeps and sustains the ultimate question: "how can health be possible?" Like a flame, at the same time illuminating and creating shadows.

As operational characteristic of systems dealing with complexities, the system needs to strike a balance between *redundancy* and *variety*. *Redundancy* consists in the repetition by the system of well-established meanings, creating the sense of concreteness and stability the system needs. On the other hand, *variety*, opening up the system to new meanings, makes it better able to address the unending complexities of the environment.

These two functionalities give the competences the system needs to deal with its internal and external complexities (see Luhmann, 1995, pp. 172–174). *Redundancies* protect the system against losing its selections and meanings, offering secure foundations for action. The system becomes less dependent, exposed or vulnerable to the circumstances. But it is also the case that *variety* protects the system against a restrictive and harmful unanimity, leading to fatal errors. It is of the nature of communication that it cannot prevent challenges, negating the validity of what was communicated – what, as opposed to *redundancies*, opens up the possibility of inclusion of *variety* into the system. The system is not built for acceptance alone; therefore a degree of *variety* is fundamental for making a system better able to address the environment's complexities and changes. Too much *redundancy* leads the system to become unable to face new challenges. Too much internal *variety* and the system may lose self-reference.

To sum up the dynamics of increasing/decreasing the internal and external complexities, let's say that: too much *redundancy* and the system moves towards an increase in complexity to counteract the repetitive inertia; too much *variety* and the system drives towards reduction of complexity. Any autopoietic system is engaged in such dynamic processes.

We can thus conclude this section by saying that the *form of problem* is a technique of approaching complexities; it establishes the orientation towards finding possible solutions, and at the same time allows for the indeterminacy inherent in complexities, the recognizable diversity and contingencies.

A question such as "how is individual or collective health possible?" implicitly acknowledges diversity and complexity; it gives room for the uncertainties of the unknown side of the complex subjects, and at the same time provides orientations to narrow down, even if provisionally, a selection of items and themes to be distinguished, observed and handled.

The general question remains unanswered and open to new formulations, open to be respecified, without vanishing when specific answers are found. It rather builds new formulations on answers previously obtained.

Furthermore, as the human body and its diseases open up universes of huge complexities, addressing the health risks of populations and distribution of healthcare services is equally hugely complex. So these complexities constitute formidable reservoirs for scientific exploration and expansion.

By being aware of the systemic manner of formulating problems and proceeding with enquiries, the disciplines acquire relevant self-references. As public health has among its responsibilities the task to explain to the health system what the health system is, its questions and answers make clear the social differentiation of health systems and their self-reference.

Symbolic medium and second-order observation

We saved for this section of the book a brief discussion of some important points of Luhmann's theory. The discussion should help us to see the basis and implications for using the concept of symbolic medium, and to understand the meaning and relevance of second-order observations. We develop these topics in the following.

In the section on symbolic medium, in Chapter 3, we talked about distinguishing the conceptualization of health as a symbolic generalized medium of communication and the body as a symbolic medium. Here we add a few more thoughts on those difficult but rather interesting themes. Perhaps the reader will find it useful to read those previous pages before continuing, because the following discussions start from there.

The body

Metaphorically speaking, we can say that the *body*, as symbolic medium, only appears in the health system as words, as symbols, and symbolic representations as meanings, because the health function system, like all the other social function systems, is made up of communications, nothing else. It could not be different. Likewise, diseases can only be part of the communications of the health system (be considered inside

the health system), if described in words and therefore communicated as meaningful semantic descriptions of forms distinguished in and attached to the symbolic medium of the body.

It is important to grasp these notions. The human body, as a concrete object in the environment of the health systems, does not enter the health system. The reader should keep in mind that medicine as sub-system of an essentially communication-based function social system exists in the realm of meanings. Only meanings – more precisely communicable meanings – make medicine. This is perhaps a tough statement to sell, but perfectly understandable within the Social Systems Theory. Only the symbolic body – in other words, only the meanings referring to the concrete bodies and their diseases – can be the object of attention and theme of communications in the health system. Indeed, bodies and diseases are concrete occurrences in the environment, in the real world – there should be no doubt about that – but in the communications about them, they still consist fundamentally of meanings, nothing else.[5]

We also need to bear in mind that communication has a comprehensive span, not only including the conversations a doctor has with another doctor or the conversations among health professionals. Communications can involve utterances in any health context but also countless written formats, such as records in patients' files (electronic or paper media), medical statements, results of exams, reports of procedures, assessments of health programmes.

Returning to our topic, as symbolic descriptions (expressed in words), the diseases can only be inscribed and related to an equally symbolic substratum (a symbolically represented body); that is, a meaningful representation of a disease has to be linked to and based on a

5 One could argue that medical professionals, maybe surgeons particularly, carry out actions not communications. But we need to consider that before, at planning stages, during the procedure, and after the surgery, there are lots of communications going on. Surgeons often consult with each other and interact with other specialists and auxiliary staff all the way through. We could say that if surgeons were forbidden to communicate, they would not be able to perform any surgery.

symbolically represented body. We are dealing with bodies and diseases in a universe of communicable representations, no matter how closely linked the meanings are to the empirical realities. While treating a patient, doctors are so close to the actual body and its ailments that they lose sight of the fact that they are communicating among themselves, and signs and symbols acquire reality-like materiality with references to textures, consistencies, shapes, weights, odours, and so on. But, still, the only way the health system can communicatively deal with diseases is through the meaningful descriptions of diseases in the symbolic medium of the body.[6]

Throughout the history of medicine, the body has remained a symbol, "container-like", so to speak, with all forms found in it and described in words as constitutive structures and functions; in such a symbolic medium, the diseases were inscribed and also "symbolically carved" as forms corresponding to observable evidence of dysfunctions.

To conclude, we should remember that the human body also appears as a symbolic medium in other function systems. For instance, in the system of arts it appears in association with representations of aesthetic values; in the political system, as possibly policy-relevant numbers, such as in armies, schools, housing, workforce; in the legal system, as granted and bestowed with rights (even dead bodies have rights); in religious systems, as having sacred attributes corroborated in prescribed rituals. All of these are examples of symbolic domains.

In Luhmann's characterization of medium and form, he explains that the constitutive elements are *loosely coupled* in a medium but *tightly connected* in a form. Because of that, a form can be perceived while a medium remains abstract, unperceivable as such. A medium is only

6 In her book *The Body Multiple*, Annemarie Mol (2002a) reports the findings of her research on the representations of arteriosclerosis and how it differs according to the orientation of the professionals. Surgeons, angiologists, clinicians, physiotherapists tend to describe different things when they refer to patients with arteriosclerosis, the identification and cause of the disease, and how they should be treated. This gives us a clear example of how health professionals are indeed communicating in the realm of meanings and symbolic representations.

perceived in the forms it acquires. A medium cannot be apprehended in itself.

These definitions create some difficulties for us when we try to characterize the body as a symbolic medium. The question that may arise is what are the elements that are loosely coupled in the body medium and tightly connected in the disease forms. To solve this conundrum we need to consider a number of things. Indeed, there are many concretely observable bodies everywhere. Those are neither medium nor symbolic. Regardless of the potential symbolism any of them may acquire in certain contexts, in their simple immediate existence they remain biological beings or just occupiers of space. In contrast with those, the symbolic body is a meaning, a representation referring back to the empirical one. As medium, such representation is full potential, an almost infinite reservoir of countless forms that can be configured in symbolic connection to it. As a symbolically "opaque and blurred intangible mass", the body can nevertheless receive and "display" precisely defined, but inevitably also symbolic, marks and structures.[7]

We can say that the *loosely coupled* elements in the body as a symbolic medium are all the components that medicine analyses in search of identifying the diseases afflicting patients. The medium includes all that can be seen in samples of blood, urine, faeces and other tests. It includes enzymes, hormones, diverse biochemical and organic compounds; electrical signals; tissues, and all anatomical features; multiple types of cells with their diverse functions; genes and DNA; antibodies; as well as everything that can be observed during external clinical examination and internal exploratory procedures and surgery. The human body is a hugely complex assemblage of a vast number of interrelated elements. These elements acquire particular configurations specific to each disease. A disease therefore is a *rigid coupling* of some elements in a peculiar composition – that is, a *form*. The elements are "loosely" coupled in the symbolic medium as healthy bodies have an excess of possibilities to continue be-

7 The operations, syntaxes, rules, articulations, and so on in the symbolic realm are matters of linguistics and semiotic studies.

ing healthy, with a large range of variations in all elements in the same individual as well as across individuals.

The gains from seeing medium and form in this way can be explained as follows. It helps, for instance, to follow the history of medicine as a continuous struggle to identify forms and form-constituting elements in the human body, and to enrich its symbolic representation, reflecting the empirically observed complexities. These understandings also help us to see the universality of medicine as built on the unique, singular, stable and permanent symbolic medium – fundamentally the same body wherever medical knowledge has taken root.

If we try to consolidate all that in a few short sentences, we can say that the symbolic medium of the human body is a massive repository of the complexities of all symbolically represented elements that can be observed in a healthy, sick or dead body. The health systems, as well as any social system, cannot address complexity as such, but medicine has developed selective approaches to extract from huge complexities only the designated relevant elements, and observe them in concrete bodies as deemed suitable, orientated by the symbolic representations it constructs itself.

The symbolically generalized medium of communication (SGMC)

We briefly talked about "health" as a SGMC in Chapter 3. Now we add a few points. In our contemporary society, a reference to health systems elicits many associations. In the health systems we can be professionals, patients or populations exposed (or not) to health risks. Outside it, as observers of health systems (researchers in the academy for instance), we may realize that something valuable for the society is generated, which does not refer exclusively to medical care.

In previous chapters we talked extensively about public health as a universe of meanings and communications in itself. So when we hear that a health professional (not only doctors) has expressed an opinion or given advice on any health matter (not only medical), that message carries the validity claim of being constructed within the health semantic universe of matters of legitimate attributions and responsibilities of the

professional concerned; that grants attention and predisposition to acceptance of the opinion that would not be the case otherwise.

The same opinion expressed by the pastor of a church, or a schoolteacher, or actor, or reporter, or sportsman, or policemen, would not be identified as a valid and legitimate health message; in these cases doubts could be easily raised and the message dismissed.

In this sense, health is a SGMC, the main characteristic of which, as Luhmann described it, is that besides being a medium through which messages can be conveyed, it increases the probability of acceptance of the message. Those entitled to communicate through the SGMC of health receive attention and recognition that other mediums of communication cannot grant for health matters of concern.

From time immemorial, suffering patients were – and still are – willing to follow any advice on what they must do, whether given by a traditional healer, a charlatan, a priest, a shaman, or a doctor. Suffering brings acceptance of help, no matter if eventually it proves to be deadly. Incontestably, in a direct doctor/patient interaction, doctors are granted space. But not only that; when we look to public health interventions, where the suffering may not yet be widespread or visible to the society, there is also acceptance of the assumed value of an intervention explained to the population. Mass vaccination is an example of that. COVID-19 vaccination campaigns are vivid memories for all of us. In fact, all preventive interventions can be analysed in the same fashion.

The issue here cannot be explained only by the fact that such interventions are matters of state power and decisions of political systems; we can see such a reception also in private health insurance schemes, for example, where the insurers see prevention as beneficial for the insured as well as for the scheme. The plausible argument communicated through the health medium (the SGMC) becomes more convincing. Imagine if the finance director of an insurance scheme or of a Ministry of Finance is the one who publicly makes the health arguments? It would not be as convincing as coming from someone seen as entitled to communicate through the health medium.

An additional feature of such a medium, as mentioned in Luhmann (2016, p. 130), is that a good medium for functional systems presup-

poses that the constitution of forms or conveying of messages, as for the SGMC, do not wear out the medium. In fact these medium are renovated. As a SGMC, health is renewed by new communications, which create new possibilities of communicative connections and their acceptance.

Importantly, the propensity for acceptance distinguishes the concept of the SGMC from the previous theme of the body as a symbolic medium. These explanations should have made the difference clear. While the SGMC is a medium essentially for communication purposes, the *body* as a symbolic representation is of epistemological relevance and constituent of medical knowledge itself.

Health as a SGMC is renewed and kept open for subsequent use as a recognizable conveyor of health messages with implicit validity claims; while the *body* symbolically represents the on-going accumulation of its actual and potential components.

Second-order observation

In "The Code of Medicine", Luhmann (2016 and 2023) acknowledged that *health* fulfilled all requisites to be considered a social function system. However, he called the *health system* the "system for the treatment of the sick". In that publication, Luhmann seemed to present a narrower notion of what health systems actually are. This is understandable, considering that in the late 1980s, when he wrote it, many critical health systems issues were not yet well grasped and widely discussed, and the term "health systems" was not generally used with the meanings of today. Nevertheless, it seems that he did not investigate deeply enough the extensiveness of "public health". He did not see the countless operations now performed as public health functions.

We can say that there are two problems with characterizing health systems using the words he chose: (1) More than "treatment of the sick", medical practices involve complex processes of identifying the sicknesses, treating them (for sure), but also preventing recurrences, avoiding severe occurrences, as well as considering predispositions,

prognostics and susceptibilities;[8] (2) Although not covered by the name he selected, prevention activities focusing on healthy people are also part of the same system. So the current commonly used name "health system" is better suited because it embraces all procedures and programmes taking place in the system (not only medical treatments).

There is a plethora of public health preventive interventions in which medical attention may be minimal or even absent. We can mention, for instance, occupational health (looking at reduction of work-related health risks such as exposure to chemicals, excessive noise, muscle strain and stress); sanitary inspection (looking at reducing risks related to expired, improperly stored or spoiled food and medicines, and so on); sanitation (such as looking at control of health risks related to water-borne diseases and sewerage); surveillance of disease vectors (such as mosquitos, rats, insects and poisonous animals); *one health*, as an integrated approach to human, animal and environmental health; epidemiological surveillance (monitoring society's profile of diseases, the trends, including violence and accidents, and outbreaks of epidemics); quality monitoring (for certification, licensing and accreditation of health facilities); monitoring of radiation risks (for eliminating health risks of users of radioactive materials, X-ray, and so on); community health and health education of communities (making communities proactive for reduction of health risks); and many others. Besides all that, public health also includes all the operations related to planning, implementation, monitoring and evaluation of health services and programmes, comprehensively covering all fields of health administration and decision-making at the level of organizations and health institutions. All these fields require multiple specific training and not necessarily a medical diploma. In all of them, the concerns in focus are the risks for populations, not the diagnosis and treatment of individual patients. Furthermore, and particularly, public health is exactly the component of the health system that makes possible the reflection of

8 In some circumstances, leaving a patient untreated can be justifiable, with such decisions being taken entirely within the scope of responsibilities of the health system.

the system about itself as a system. The term "treatment of the sick" does not comprehend any of these practices and horizons.

Nevertheless, we find in Luhmann's theory many valuable concepts for our understanding of health systems. The reader may recall the concept of "second-order" observation mentioned at several points in this book. The reader may also remember the two binary distinctions: healthy/sick and at risk/not at risk, which for our subsequent discussion we can refer to using the concept of "double coding", also found in many of Luhmann's texts.

We mentioned that the health system operates with two binary distinctions: the original *healthy/sick* code and the additional one, *at risk/not at risk*, developed later. Table 9.1 summarizes our views of these distinctions:

Table 9.1: Health systems' double coding and focus

	Healthy/sick	**At risk/Not at risk**
Individual	Medicine	Medicine
Collective	Public health	Public health

Medicine focuses on individual sickness as well as the risks and probabilities of an individual being treated developing, for example, side effects, recurrences, co-morbidity or vulnerabilities in consequence of the actual disease or related to/in consequence of the treatments they received. Public health instead focuses on the occurrence and distribution of health and sickness in populations (including ratios between sick and severely sick, such as malaria cases and severe malaria cases), and estimates the probabilities (risks) for populations – however risk can be defined: as exposing collectives to negative health conditions, diseases and effects. This double coding comprehensively covers all possible characterizations of attention and efforts deployed in either of the sub-systems of a health system.

With these distinctions, public health can perform its observations of populations and design risk-reducing procedures to improve the prospects, without treating diseases but just addressing risks and risk factors. This is the essential preventive nature of public health, looking for ways to prevent the human collective's health conditions from worsening.

In relation to the deployment of binary codes, repeating what was explained earlier, one side of the binary code leads to further communications within the system; it is the connective side, linking one communication to the next, while the other remains as the reference/reflection side. Within the medical sub-system, there is not much to communicate about a healthy individual; the communication then stops. However, within the public health sub-system, healthy individuals can be further distinguished with the deployment of the at-risk/not-at-risk distinction, at risk being the connecting side of the binary code. Central to public health concerns and communication is the identification of populations at risk and consequently the preventive actions to reduce the risks. The not-at-risk side remains the reference/reflection side.

We can say that public health often needs to perform "second-order observations", by which it considers what the medical side of the system has been doing. It goes without saying that doctors perform "first-order observations" on the bodies of their patients, while public health observes what medicine observes (observation of observers), and from that estimates the population's risks – frequency of diagnosed diseases, for instance, being a way of approaching risks. Although doctors also often perform second-order observations (when for instance they observe each other), public health performs broader analysis of trends in diagnostics and general outcome of treatments dispensed by the medical sub-system. With the reference to the attribution of sickness, but considering its own distinctions related to distributions of collective risks, public health can work on ratios such as sick population/general population; severely sick cases/sick population; population exposed to specific risks/general population; population sick due to exposure to specific risks/population exposed to specific risk; sick population get-

ting needed care/sick population; sick population cured/sick population treated; and so on.[9]

By performing "second-order" observations of what the medical subsystem does, public health can construct its measurements of risks, using the arsenal of formulas for calculation of indicators. For instance, public health can generate indicators such as efficiency, effectiveness, equity, performance and coverage, as presented in Chapter 6, characterizing and establishing attributes of the services made available, provided and received by the collective. In short, public health constructs social projections of services the medical sub-system generates.

As public health looks at the collective (including the healthy ones), not the individual, we can say that health systems are in fact more complex than Luhmann described in the mentioned publication. In practice, in any health institution, public or private, the separation of the two subsystems is very clear not only because of the differences in the codes they use but also the horizons of their observations. Every decision in the public health realm is concerned about reducing risks in some way; all decisions (all programmes, all initiatives, all implementations, all policies, and so on) are only justifiable on these terms. By doing that, public health can reflect on the health system as a system, contemplating it with the mission of reducing society's health risks and therefore, at some point in the future, perhaps eliminating diseases, or making societies free of diseases – that is definitely a health system's undertaking, not a medical task.

9 Following from the presentations in Chapter 6, most public health indicators can be interpreted as "second-order observations", because they correspond to observations of observations carried out beforehand by other observers. For example, effectiveness and equity are estimations often based on outputs and outcomes of services delivered on the healthcare side (medical) of the system.

Public health, self-reference of a scientific domain

In this section we reflect on the epistemological fundaments of public health. As a scientific field, medicine sits well within the broader domain of biological science; undeniably, human bodies are biological beings. However, public health has a complex place in the scientific realm.

As stressed throughout this book, what distinctly and essentially defines public health is the notion of risk. Risk is the central concern of public health. Risk as chances of occurrence of diseases (or aggravated conditions) in collectivities; risk as the probability of illness and illness-related occurrences among members of a collectivity.[10]

Risk is not a being, an object, an event or an entity; it is not a given phenomenon in the empirical world. Risk is a relation, a probability of "something" happening or not. If this "something" happens as diseases or worsening of diseases, the diseases themselves are to be dealt with within the medical domain (ultimately in the realm of biological beings), while the probabilities as indicators of threats to the collectivity have to be tackled as risk and public health matters of concern.

Risks are not observable as such, despite the fact that risk factors can be observed and must in fact be empirically established, even if tentatively. Risks can be estimated, calculated and used as guidance for prevention, but they carry indeterminacies and thus confidence intervals as any probabilistic estimates do. Both in hindsight as risks of past events or risks of future ones, risks are calculated chances, approximations based on the data available in the present.

We could say that medicine and public health have two contrasting ontological assignments. The health systems need both orientations. Medicine approaches an ontologically constituted entity: the human body with its concrete ailments. Public health approaches populations, looking for health risks to tackle. However, risks are not concrete and not as unquestionably present as the bodies and their diseases are. Risks are estimated with observations carried out in the past. The risk

10 We suggest returning to the sub-section on "Risk" in the "Concluding remarks" section of Chapter 6. That section should be read in conjunction with this one.

estimated in the present refers to the past; its projection into the future for justifying preventions does not embody an ontological reality; the predictions may be confirmed but may equally not be. On the other hand, the body of a patient cannot be dismissed as mistaken, even if the diagnosis and treatment were later proved to be wrong. The ontological status of the patient as such, no matter the accuracy of the diagnosis, is incontestable.

These two contrasting positions are relevant for any health system's practical concerns and decision-making. The health systems are concerned with both tangible and intangible entities. As observer, the health system constructs them based on the distinctions it deploys. However, on one side the observer has an object to focus on, and on the other side it has a presumptive "abstraction" it establishes, one that is always moving from the past into the future.

Risk factors – the elements and potential intervenient contributors or co-generators of disease occurrences – have to have plausible causal links to the diseases they presumably determine or aggravate. The causal links between risk factors and diseases may be direct, in the order of biological interaction between organisms or organisms and environment (toxic waste for example), or indirect, as facilitators of the direct causal organic interactions. Social determinants are not pathological per se, but may lead to increases in the chance of exposure and direct contact with pathogenic factors, or may prevent or reduce the chances of delivery of preventive and/or curative care.

From 2010, the WHO incorporated into its parlance the concept of social determinants of health, gathering non-medical factors under the banner of the "social". Broadly, the frame includes diverse types of factors. From the WHO webpage:

> The following list provides examples of the social determinants of health, which can influence health equity in positive and negative ways:
> – Income and social protection
> – Education
> – Unemployment and job insecurity

> – Working life conditions
> – Food insecurity
> – Housing, basic amenities and the environment
> – Early childhood development
> – Social inclusion and non-discrimination
> – Structural conflict
> – Access to affordable health services of decent quality.
> Research shows that the social determinants can be more important than health care or lifestyle choices in influencing health. (WHO, 2010a)

Unquestionably, this framework comprehensively covers many possible determining factors.[11] The WHO's concern with *health equity*, as expressed in the quoted paragraph, seems to be the basis for assembling and calling such diversity of factors "social determinants". Certainly, "equity" can only be addressed or referenced in a social scheme of references. Equity is essentially discernible as a social phenomenon of distribution of opportunities across population segments.

However, calling all the listed factors "social" is a stretch too far and mischaracterizes social attributes, which might be determinant of illnesses without primarily having "equity" effects. Many factors may affect all members of a given collectivity, leading to poor health without configuring inequities, but still remaining a social determinant and intervenient factor. Poor education and cultural misconceptions, for example, may lead to cases of preventable diseases regardless of the structure or stratification of the society. In short, one can see the *social* without necessarily looking through the *equity* glasses.

Nevertheless, we take inspiration from the idea of "social determinants of health" and consider the distinction between *biological/social* (or, with similar denotation, *medical/social*). In other words, *non-medical* means *social* – that is, sets of *non-biological* contributors to the occurrence of diseases – to be understood as intervenient *social* causal factors,

11 We could add others, for instance in the political field, such as lack of accountability and participation in health system decisions.

where biological determinants (that is, medically identified) are those affecting the individual organism, and social determinants affect the collectivity, presumably facilitating the biological connection. We can live with such understanding so long as we nevertheless recognize that with such use of the word *social*, countless phenomena, which are in fact addressed by specific scientific and technical fields, not necessarily covered by socio-science.

We understand that when we search for risk factors and we make incursions into the realm of social determinants, a whole universe of factors can be brought to the fore for consideration, as such use of the term *social* includes a huge range of variables in the fields of economics, culture, education, law, management, politics, religion, occupations, and so on. Ultimately, these variables shape the social factors leading to the *risk* of getting sick and/or the sickness being aggravated, but they have their own specific "causality mechanics".

The main message we want to convey and focus on is: we may say that public health is a scientific domain absorbing other disciplines' paradigms into its observational approaches. Emphatically, we may say it seems that public health would not be able to figure out its "object", *risk*, without deploying concepts borrowed from a plethora of paradigms and potential determination links found in other scientific domains.

As previously mentioned, risks cannot themselves be observed, as they are purely relational constructs. In themselves, risks are invisible, intangible. We can therefore say that *risk* has no ontological essence. In public health, *risks* are always defined, determined and constructed. Referring to risk and projection of risks into the future, Luhmann (2008b, p. 72) says: "Like the overall concept of probability, every measurement is fictitious and thus nonbinding – at any rate when it is a matter of statements about the future […] no one already lives in the future". They are constructed themes and cannot be themed without the presumed causal factors and causality relations.

To talk about *risks*, public health refers to the *biological* and/or the *social* causal plausibility. From diverse scientific domains, public health takes variables and their ontological character (as concrete objects, beings, events, measurable attributes, social entities, and as empirically es-

tablished variables). The borrowing brings to public health not only the conceptualizations but also the empirical approaches developed in the knowledge fields the variables come from.

In simpler words, economic factors, for instance, deemed to have influence over the causation of a disease in a given collectivity, are brought into the public health field of reflection with their empirically defined dimensions as actualities. The validity of the borrowed concepts and variables can only be questioned within the ambit of the science that established them. What public health can nevertheless do is reflect on the soundness and applicability of those concepts and variables for addressing risks and risk factors.

Taking a brief detour, the concept of *resilience* is a good example. Resilience was formulated as a scientific concept back in the 1970s, and was consolidated in the 1980s with the works of Dr Norman Garmezy and others, studying factors strengthening the mental health of children and adolescents living in stressful contexts. These were works in the field of psychology and psychopathology (see Shean, 2015). The concept was imported into social science, and from there brought into public health, arriving in the literature by 2015 (see Barasa et al., 2017), where it has been used to refer to survival of health systems in difficult contexts. The concept was seen as an inherent attribute of the systems, leading to increased chances of survival under severe constraints.

The importation of concepts brings with it the formulations elaborated in the science from which the concept originated. The question the science that formulated the concept answered included what, when, how and why something became resilient. In importing the concept, the science has to go through a process of assimilation and adaptation of the concept, endowing it with a distinct outlook. More specifically, in the public health domain it is necessary to ask questions and make the concept work in relation to reduction of health risks. It is necessary to argue whether a system showing specific signs of resilience (to be clearly described – impressionistic descriptions are not enough) also shows signs of reduction of health risks in the covered population. We must keep track of the risks.

If resilience is achieved with maintenance of behavioural patterns that do not decrease health risks, it might still be defensible in the territory of social or political science, but not in the field of public health. Of course, it all needs to be treated empirically. Resilience in itself is not an unbounded positive value. Qualifications need to be made because bad habits are also resilient.

We say here that there is nothing wrong in borrowing concepts, but the work that has not yet been done is to relate the concept of *resilience* with clear observation of risk reduction. Without linking the imported concept with the core public health business of reducing populations *at risk* (or preserving them in the *not-at-risk* position), those studies remain in the realm of social science or public management disciplines. So we might say that we, public health professionals, borrow concepts at our own peril.

Nonetheless, social determination of illnesses entered the modus operandi of talking and thinking of public health. The role of the social determinants of risks of getting sick (or not getting the necessary treatment) is attributable to the presumed causal links of the variables deployed in the study. The social determination is dependent on the attributions the study will try to observe, find evidence of and later on possibly tackle.

In contrast, the effectiveness of biological determinants is on more solid empirical ground. Public health interventions will need to, somehow and at some point, address the biological plausibility directly, checking the chances of success of collective prevention of diseases. If the water is contaminated and the communities are consuming it, the biological link of source and health damage can be established without resorting to social determinants; the same for preventable diseases for which vaccination should cover as many people as feasible regardless of social factors.

The dual order of causality, the *social* and the *biological*, requires the combined observation of the social and biological environments and the factors producing or contributing to the production of the diseases in "both" environments, so to speak.

At the end of the day, as we have been repeating ad nauseum, any public health indicator is concerned with risks, risk distributions and reduction of risks. The actions – better still, the public health interventions – will need to find justifications and feasibility in the dimensions of biological and social factors associated with the risks in focus. The justifications should show how improvements in indicators such as equity, efficacy, effectiveness, efficiency, coverage and disease profile are attainable by tackling biological and social risk factors. Keeping in mind that risks can only be tackled through such factors.

What we have done in this final section is what the Social Systems Theory calls second-order observation or, in other words, observation of observation – that is, how public health can observe itself as observer, performing therefore self-reflection. Such practice is the way forward for the development of public health self-reference.

To conclude, we have a few additional words. We assume that *biological plausibility* is optimally confirmed through clinical trials. *Social determinant plausibility* is confirmed through epidemiological studies. Clinical trials and epidemiological research can and often are carried out together. Epidemiology is the ultimate ideal calculator and estimator of risks.

In any public health intervention, even if only interested in, say, managerial (training of health district managers for example) or economic objectives (increase in the health budget for instance), and far away from the biological dimension, the outcome must in one way or another be measured and justified in terms of decrease of risks or risk factors.

As an example, let us consider managerial initiatives promoting models such as decentralization or adoption of horizontal hierarchical structures. These models, and their sociological fundament, economic rationale, or legal and political justifications, become incorporated into public health knowledge when links to reduction of risks are, even if tentatively, established. Otherwise they cannot be considered as belonging to the public health universe of meanings, remaining instead in their original field of knowledge.

This understanding has correspondences in all public health indicators presented in Chapter 6. All of them ultimately should refer to assessments of risk (or risk factors or exposure to risk factors, or all together), even when the calculation of risks is extremely difficult – such as when equity indicators are used to judge differences in access to healthcare among different segments of the population without specifying the diseases and risks involved. Even if not precisely measured, access to healthcare surely has effects on the health risks the population faces. Such statements can therefore be accepted as belonging to public health.

Sometimes it is necessary to use "proxies", such as lack of access to healthcare, as the risk factor when the diseases and their frequencies cannot be reliably specified. It can be reasonably assumed that difficult access to healthcare can indeed be risky for the collectivities experiencing it. In fact, public health works with estimations, guesses and assumptions that are justifiable when risks are incontestably present but cannot be calculated or unquestionably estimated.

The thing is, when comes to public health decisions, the total inventory of risks to be dealt with for optimization of solutions cannot be achieved in a definite and incontestable way. There are always other possible narratives, as our discussions in Chapter 6 about the indicators and their contingency showed. The maximization of reduction of risks across the board is too difficult to achieve or proved to have been achieved. The health system has to content itself with the feasible solutions that seem to have reasonable prospects of achieving significant risk reduction. It may not be proved to be the best or the optimum, but it is feasible and carries guarantees that benefits will be achieved.

When indicators related to organization, sustainability, financing, governance, environmental impact and others are used, the considerations of risks are indeed implied. Plausible biological links are in one way or another at least suggested or assumed.

It has been asserted elsewhere that public health publications hardly discuss the theoretical references they are based on. It is understandable that public health does not have its own theoretical basis and relies on theories, models, concepts and frameworks from which it borrows vari-

ables. However, this should not necessarily be the case. We believe this reflection is necessary to advance public health theoretical thinking.

Public health has to be more concerned with the issues of risk in a more explicit and focused manner, also understanding the challenges of decisions based on risk expectations, and the chances of occurrence or non-occurrence of the predictions. In this sense, there are risks in dealing with risks. A decision-maker deciding on the basis of foreseen future risks is bound by their decision and by the need to confirm the predictions.

> „Furthermore, on the social, normative and time dimension of risk, the decision maker may resort to norms by which decisions are formulated and acquire normative basis endowing it with extra probabilities and potential for achieving future results. Likewise scarce resources are allocated in ways of tackling the estimated future risks in a hopeful bet that the allocation is optimizing the use of available resources. All to be sensibly articulated and justified in terms of the aimed risk reduction." (Luhmann, 2008b, p. 69)

Will public health one day be able to develop theoretical themes of risk without resorting to other disciplines? This is a difficult question. At this point in time we can only say that prevention can be as close to the biological plausibility as, for example, vaccines are. However, all preventive actions will always require a degree of *social determinant* composition through which the collectivity under the "menacing cloud" of a specific risk can be identified and helped. The outlooks of the collective and its social determinants will somehow be "constructed" through its social, anthropological, cultural, environmental, economic, political, religious, legal and educational attributes. All social collectives have or can be assumed to have such types of attributes. Risks not only are detectable in such contexts of attributions of socially structured identifications, but also can only be addressed through those attributes when the social enters the consideration of the interventions to be implemented. There can

be no public health interventions that are not, in one way or another, social.[12]

Finally, we say a few words on the borrowing of concepts from other scientific fields. There is no problem in borrowing. Physics has borrowed – and still does – a lot from mathematics. But the scientific domain importing concepts should be aware of the borrowing and be critical about it. Otherwise high "interest" can bankrupt the business. The "imports" should be "exchanged" with "currencies" of the discipline "importing" the concepts. Humour aside, we need to be mindful about where the borrowing takes us, and do not lose sight of "risk", our core theme, which we have legitimate responsibility and role to preserve. When, for instance, we say that higher maternal mortality rate seems to be associated with societies with low income and education levels, we know that we are bringing from outside the health realm the social notions of income and education, concepts over which we do not theorize or claim historical authorship. We borrowed them; and self-reference tells us that there is nothing wrong with that. Although possibly one day the owners of the original concepts will raise questions such as: "this and that concepts are no longer what you say they are; we have already changed them". Then what shall we do?

12 For those interested in rich reflections at the intersections of anthropological and public health studies on health risks themes the book edited by Panter-Brick and Fuentes (2010) has a wealth of contributions.