# Chapter 8: Concluding Remarks

Why are these topics relevant? How does the understanding of the historical configuration of health social systems help us improve them? These are our themes in the concluding remarks. A summary narrative of the evolution of systemic features of medicine and public health is our starting point in this chapter.

In the evolutionary stages of the first two periods and most of the third period, the uncertainties an individual doctor had to deal with were kept as his own exclusive concern. The doctors considered examination, diagnosis and treatment of patients their own individual business. From a certain point however, still in ancient times, examination, diagnosis and treatment progressively became scrutinized by other doctors. Later on, with formal medical education and the setting up of guilds and associations of medical professionals, the scrutiny became progressively rooted in more institutionalized roles. By then medicine had developed its own control of training, licensing and practising, and had established the correct use of exclusively medical semantics. At that stage, these were *systemic* features being made operational. The uncertainties an individual doctor had to deal with were no longer matters of concern only for the individual doctor; these concerns now belonged to the system too, even in its embryonic stage.

The system had to make sure that all doubts were addressed in a systemic way; doctors' doubts became medicine's concerns. Medical knowledge had (and still has) to find the answers. It moved on to the stage where, among other initiatives, commissions needed to be formed and informed; all possible courses of action considered; all possible evidence

gathered; and then a system-endorsed decision could be made, which became the responsibility of the system as much as of the individual doctor.

Currently, there is a vast literature on every single aspect of diagnosis, prognosis, examination, treatment, procedures, and effectiveness, comprehensively addressing individual patients' particularities. These studies and measurements are recorded for a huge diversity of settings and conditions where patients are living and being treated.

Health professionals are often required to read through a vast amount of published evidence on the issues they are concerned with. Nevertheless, doctors are no longer supposed to have all this information in their minds. That is impossible; they cannot even keep up-to-date knowledge of all studies in their specific specialities. They need to use search engines and devices for selection of materials they need, gathering manageable samples of relevant texts. The task has more than ever become one to be dealt with by the systems; the systems have to assure availability, access and support for dealing with an ever-increasing literature.

We can also say that, in huge contrast with the early stages of the profession, medicine has become less and less the medicine of the individual skilled doctor, fully knowledgeable on the matters at stake. We now see the medicine of teams of clinicians, specialists, surgeons, and so on, aided by information technologies mobilized when needed, plus a multitude of supporting professionals with their varied specialized tools (clinical laboratory, radiology, imagery, physiotherapy, pharmacology among others).

The complexities already uncovered and requiring further attention are beyond the capacity of any individual professional. Doctors do need the health system, as much as the health system needs them. The system brings about the communication channels and connections to guarantee stability for handling the ever-increasing complexity of the topics.

We therefore see medicine (and the health system as a whole) facing two environments: the internal and the external. The external environment of the medical sub-system encompasses its objects of investigation (the body, its structures and functions and the causal relations

of diseases), and the internal environment of the sub-system comprises diverse specialities and fields of information with their specific semantics. The internal complexities of the semantic universe of the system are continuously undergoing a dynamic expansion, aiming at representing inside the system (in its semantic universe) the complexities being continuously observed and tackled in the external environment (the human body).

However popularized medical information has become in recent decades, with many publications and movies for consumption by the non-professional public, and increasingly easy access to lay and professional publications online, it is still not possible to compare this dissemination of medical information with the speed and volume of new themes constantly published in specialized vehicles. As already said, this represents a considerable challenge to medical professionals willing to keep themselves up to date with the new developments. No doubt, the gap between non-professionals and professionals remains wide and is most likely increasing. The terminologies have become too highly technical for widespread understanding.

The complexities are indeed vast. Artificial intelligence (whatever this oxymoronic term means) arrives at this juncture as a tool for processing large amounts of data and finding indications for suggesting diagnoses and treatments in some circumstances. But far from solving all issues, it brings additional ones – for instance, to "negotiate" adequate fitting before AI can find suitable niches, without removing the ethical and legal responsibilities of the doctors who make the final decisions and carry out the treatments.

However, awareness of the limits of what medical attention could deliver for the well being of populations became clear at the point when health systems were taking shape as function systems in the nineteenth century. It was acknowledged then that the attention to individual disease was only telling part of the story. There was a universe of factors contributing collectively to individual's vulnerability and exposure to pathogenic factors. Furthermore, accessing services, getting the necessary treatment and surviving the illness were dependent on many causal factors present in the system. Medicine was not expected or supposed

to address such wide horizons beyond the context of diagnosing and treating individual patients. Public health was thus created with the mission of scrutinizing those horizons and finding collective solutions.

Looking at distribution of risks (of exposure to disease, getting sick, gaining access to diagnostics and treatments, getting cured, dying – as explained earlier, the term risk can be applied to all those possibilities), public health opens itself for consideration of all factors that may be involved in framing and addressing risks.

As opposed to medicine and its focus on the body and the diseases affecting it, public health needs to look for and find risk factors in the environment (physical, economic, social, cultural, and so on). It needs to consider elements that by definition do not belong to the medical realm, and rather pertain to other knowledge fields and science disciplines, as well as other social function systems.

For that reason, public health can enter into structural coupling with other systems, deploying semantics that are understandable for the other systems. Public health can develop communications demonstrating that some decisions on education, economics, social policies and political systems may have detrimental effects on the health of the population or may achieve positive results. In this sense, public health both frames problems and arguments, and indicates solutions other systems can consider in their specific decisions.

Medicine would not be able to do that, because medical semantics are strictly concerned with diseases in the body and how structures and functions of the body can be affected and restored by treatments. No other system could enter into structural coupling with medicine on those matters (except the science system). Nevertheless, when the issue at stake is identified as disease, medicine has exclusive deployment of the semantics of diagnosis and treatment.

So, as conveyed at many points in this book, public health makes health a social system, to which medicine belongs. This is the thesis we hope we have fairly and clearly explained. We may say that public health brings the *social* to *social* health systems, and addresses health as a social matter.

To conclude this summary, we need to talk about *self-reference*, the term that appears in the title of the book and is of great relevance for us to understand health as a social system and its historical constitution.

We have shown in this book the emergence of self-reference in medicine, when it became the sovereign of its semantic domains, and therefore could self-criticize and self-reproduce the meanings it selected as pertinent to it. Medicine became what medicine said it was. We have also shown how public health recognized its task of addressing risks and risk factors and how it established its domain in the use of instruments and tools (indicators being one of them) to formulate for the health system what the health system was and how to observe its developments. By creating the health system's image of itself, public health also creates its own self-reference, which it can adjust and change according to its own criteria.

It may sound confusing that these two self-references, so distinct in their scope and focus, can jointly compose the self-reference of the health system. This seems to create a tension: how could the two self-references be harmonized? Is there a third self-reference – the health system's one – that differs from the other two? The answer to the second question is no. The self-reference of a health system is either referred to as medicine (addressing sickness) or as public health (addressing collective risks). Surely the interconnections of these two sub-systems are permanent and continuous. For instance, public health can contribute with relevant findings from epidemiological surveillance; medical information about diagnostics and results of treatments are also relevant for public health estimations of a population's risks.

Thus, there is no reason or justification for separating these two fields as if they belonged to different systems, or as if there was a third system comprising both of them. As mentioned earlier, and needs to be emphasized again, public health has among its attributions the role of developing the image of the health system as a system for the health system itself.

A health economics approach may tell us there is no permanent and unique solution to the question of the optimum resources allocation for delivering care to single individuals, according to their specific needs,

and at the same time achieving a general allocation based on collective rationale – that is, maximizing the reduction of risks for populations (a sort of Pareto optimum). This is why universal health coverage is a problematic concept. Individual healthcare and population health risks are hugely complex dynamic universes; they have to be addressed by selections, for describing allocation options and for delivering necessary healthcare on a daily basis. Making selections requires facing reality in some ways.

But let's continue our reflections on the two main sub-systems of the health social system: medicine and public health. A particular relevant way they are different is how external observers see them.

Public health is the "constructed" face the health system presents to society. It explains what the system is, what it does and what it is aiming at. The indicators reveal the picture in terms that can be understood both technically and by those without technical knowledge. Public health narratives are designed for diverse audiences. The narratives may enter the discourses of political parties, establishing political aims for the health system. They can circulate in non-specialized media, promoting a sense of what is at stake and how the system is responding to the challenges as far as the health of the population is concerned. The narratives can also enter discussions in communities, NGOs, associations of patients, health insurance policy-holders, and many other types of social organizations, in line with their specific agendas. The narratives may be incorporated into the expectations of population groups claiming rights. We cannot examine here the full diversity of communications that may be generated with public health narratives.

We can metaphorically say that public health is the "dialogue face" that the health system offers to organized society (including other social systems such as the political, the educational, the economic, the legal) to explain the health system's orientations, operations and results. This "dialogue face" also listens and observes expressions and reactions. If a hospital needs to be built, if recruitment of health professionals is needed, if acquisitions of advanced health technologies must be justified, if the termination of a health programme has to be explained, then it is the responsibility of the health system, oriented to population risks, to ar-

ticulate the narratives in correspondence to what the health system says it is about to do or has done.

However, to grasp the health system as a comprehensive whole, we need to reflect on the fact that the efforts made in the public health sub-system is only a small fraction of the communicative dynamics on the medical (service delivery) side of the health system. Here, countless communications happen on a daily basis. The public would not easily understand the technical language used in those communications. They are essentially technical and the sentences are mainly meaningful for those who have been adequately trained. This section of the health system operates inside its semantic space, with very limited opportunities to be meaningfully observed from outside. However, we can say that this is where most of the life of the health system actually happens. The immense universe of communications taking place in this side of the health system needs to be continuously reproduced, and thus maintained without interruptions.

The health system cannot expose – let's say to the political system – what happens inside the medical sub-system. A politician who is not a health professional would walk the corridors of a hospital and would not understand much of what they would see or hear from the professionals in their routine work. The politician, like the political system in general, would need the figures and explanations public health teams put together to explain why that hospital requires, for example, a day hospital building constructed to alleviate the pressure of the demand.

To that end, public health officers make an abridged version of the system, reducing complexities, showing the hospital in terms of concise indicators, making the health system visible and somehow "tangible". The politician can then meet their peers and discuss what they have seen and the explanations they received during their visit to the hospital. They now have a sense of what the health system they are dealing with is about. Such complexity reduction could not be performed by medicine. It does not operate in such a mode; it seeks to reduce complexities in its field of concern – diseases and treatments.

But the politician saw the health professionals circulating, communicating and interacting with patients, how busy they were and how in-

tense the life in the hospital was. The politician could therefore realize that they could not deal with the health system in that setting, lacking the appropriate meanings to communicate, and even if they had, that would not give a view of the system that is constructed with narratives and numbers portraying specific aspects of the health system. But the politician could also realize that the health system was both the health professionals and their daily business and the public health professionals, putting together understandable numbers and narratives. The health system is therefore the collaboration of these communications.

Another aspect the politician may notice is that public health narratives can be presented with alternative scenarios, with contingent priorities, programmes and projects, adaptable to changes in the political scene and new aims and targets. There are important trade-offs to decide on. Meanwhile, the actual medical service has an implicit recurrent dynamic that must be maintained while the diseases and capacities to treat them remain more or less the same in the short and medium term. In contrast, public health priorities may change according to political commitments and the resources available; a new government may want to project its health agenda in novel direction. Notwithstanding, health services should at least remain available to patients arriving at health facilities.

These two different dynamics have influence on the self-reference of the health system, which has to incorporate both time horizons in its references. As practice, medicine focuses on the present and the patient to be treated now; while public health, checking the health risks in the past, tries to figure out how to reduce the risks in the future.

The system as elaborated by public health, with numbers and narratives explaining and justifying what was done and achieved, and what comes next, is the most visible face of the self-reference of the health system. Public health orientates itself towards the external interactions it needs to cultivate and preserve. Meanwhile, the self-reference of medicine (including all health service delivery professionals) are internal matters of the system and professional organizations; they do not require external approval, support or endorsement of their technical judgments.

In this sense, the self-reference of the health system looks inside its own communications as well as the communications coupling with other systems. The health system does not have an identity or self-reference independent from those two self-references. That would not make any sense. In one way or another, the health system will always refer to itself either as medicine (including, as we have emphasized, all health practices delivering healthcare to individuals) or public health; as treating the diseases of individuals or addressing issues in order to reduce the health risks of the population.

These understandings have implications for any project intending to strengthen health systems. It is necessary to grasp the different self-references any project focuses on – medicine or public health or their connections. Any strengthening of the medical side of the system needs to be represented and included in the updated self-description the public health sub-system produces. The advances in both sides of the system need to be recognized and incorporated into their specific communications. When the public health side uncovers evidence of important changes in the profile of diseases, the medical side of the system will develop clinical awareness of the new challenges it faces. These are simple examples. In many ways the public health views of the system and the medical approaches to patients are to be communicated and understood by both sides. The strengthening of the system will need to explicitly pursue these aims.

## Ways of looking

This section is a dialogue between two health systems professionals. We call them Alter and Ego.

Alter:  I read your book on the history of medicine and self-reference of health systems. I am not sure whether I found something to help me in my assignment in the health system of country X.

Ego:  Perhaps if I say to you that the book speaks from a "second-order observation" position, this may help you.

Alte:  I remember I came across that term, "second-order observation", while I was reading.

Ego: Yes most likely. Second-order observation is observation of observers. In this sense, the book talks from the point of view of the social system's observers observing "first-order" observers of the health systems – that is, mostly public health professionals.

Alter:  If I understand you, this means the book has been written for those who observe health systems. The public health professionals should therefore consider themselves observed [smiles].

Ego:  [smiles] Assuredly. Kindly observed though.

Alter:  Could you please be more specific? I guess "second-order" observation drags us into abstract realms. Could you give us a few precise hints of what you are saying?

Ego:  Look, public health professionals observe the health systems they work in. They talk and write about the characteristics they see, even when they do not have a systems approach, they have a "feeling" of what the system is. They describe programmes, structures, functions, operations and so on that comprise the system. They often use the word "system" meaning different things; seldom with the same meaning we use here.

Alter:  Well, thinking about the book and the observers ... I have the impression that there were more levels and layers of observers. Am I right?

Ego:  Yes, you are quite right. I should explain that better. Perhaps we can even say that in this book we are operating at the third level of observation, if we consider the health professionals dealing with patients are the first-order observers, the public health professionals are the second

level, reflecting and dealing with the aggregated observations of the first level. The public health professionals observe the first-level observers. And indeed we are at the third level, observing and reflecting on public health approaches. If we take only the second and third level into consideration, as we do in many parts of the book, we could say that we are the second order of observers of public health as the first order of observation. I hope this is not confusing.

Alter: Ok, that is fair enough. But then what does this "health social systems" of yours add to the picture?

Ego: I will need to unfold the explanations of a number of points. But for a start, let's say that if you see the "first-order observers" (public health professionals) describing the system, you need an observation point from where you can see them as an element of the system they describe. They are doing self-reflection "on behalf" of the system. This is crucial. The Social Systems Theory helps us to see that.

Alter: I see. Yes, I remember the section where the book talks about public health creating narratives about the health system, explaining what and how the system does what it does. And those narratives are used in a diversity of contexts, including political parties, academia, media, communities, and so on. I am fine with the idea that the health system is seen as described, but the descriptions could be different. Other agents could perhaps use other meanings.

Ego: Precisely! But more important is that the health system relies on its self-descriptions not on other people's narratives. That is crucial for its self-reference and identity. When we as consultants advise a health system, we must not forget that we are external observers and the system observes itself. Their observations are more important for the system than ours.

Alter: Sometimes, while I was reading the text, I felt a bit uneasy about the metaphors you used. For instance, on this theme of self-reference

and identity. The metaphors give an impression of a system as an agent, having a will, a "personality", so to speak, an ego, a big one, fully conscious of its domains, surroundings and decisions. Isn't that a bit strange?

Ego: [smiling] Yes, indeed, we are so completely aware of our introspections, as our own and unique identity, that we find it difficult to figure out this idea of identity without an ego. A central distinction Luhmann has developed in his theory is that conscience reproduces itself based on thoughts, while a social system's self-reproduction is based on communication. Communication needs the consciences and therefore there is no social system without coupling with consciences.

Alter: So far so good. So...?

Ego: I do not have direct access to your thoughts. In fact, to anyone's thoughts, to be clear. Through communication we get a glimpse of what is in someone else's mind. But miscommunications and misunderstandings are common.

Alter: Sure, there is no doubt about that.

Ego: Nevertheless, with the "high improbability" of reaching common understanding [smiles], bridging the unbridgeable gap between minds, the consciences engaged in communications create or refer to meanings that can be preserved and communicatively reproduced. Communications offer the marvellous functionality of recursively confirming (or not) the selection of the communicated meanings. We can always go back to what was said or written and ask for clarifications or, even more important, express agreement or disagreement. Communications keep open the possibilities of yes or no, and the unfolding of the conversation goes in one direction or the other.

Alter: Let's see... the intuition is that through the linkages of communications the system acquires a sort of stability and permanence.

Ego:  Exactly! You can imagine how revolutionary the invention of writing was. It strengthened the stability of the meanings in unthinkable ways for those who relied only on oral communication. Even if the authors of the narratives explaining a health system have long forgotten what they had said [smiles], the texts are still there for anyone to scrutinize.

Alter:  Using an analogy, we often hear about written works acquiring a life of their own, sometimes totally disconnected from the consciences that first constructed the texts.

Ego:  Yes, and we can also figure out how in a complex hospital context, for example, many expectations and actions are based on ongoing communications, linking past, present and future communications according to the expected meanings, to coherently follow from those already uttered. I say a complex hospital but this is also valid for all health facilities, no matter their size, and institutions.

Alter:  Ok, if a communication links to others, reproducing expectations and meanings, we can say that a system is at work. Right?

Ego:  I could not have put it better. Perfect! Stop the communications and the system disappears [smiles].

Alter:  I guess we can see that communication is how all those things related to self-reflection, self-reference, self-description, self-reproduction come into being. And all these things have stability but need to be constantly reproduced and reconfirmed. The systems therefore live with the tension between what it strives to preserve (the selected semantics and narratives) and the ambition to develop new expectations and incorporate new meanings.

Ego:  That is the point. When "first-order observers" observe their system, they need to generate narratives to be communicated and hopefully understood by those in the internal audience of the system (the other

health professionals) and some relevant addressees in the external audiences.

Alter:  Maybe you want to say something about complexities and meanings, recurrent themes in your text. Why are they relevant for those working with health systems?

Ego:  Before that, let me emphasize a few things. Those working in low- and middle-income countries with health systems that are not able to offer the whole range of benefits that medical science has already established should observe key aspects of the history of medicine and public health.

Alter:  Ha! Yes, that is part of our main concern in this conversation.

Ego: The evolution of the health system is a history of communications evolving through remarkable stages. At the extremes we see the huge transformations that took place: from making simple, direct observations on the body surface, to highly complex explanations of diseases; from nonexistence of health professions, to highly institutionalized practices of a multitude of professionals; from unregulated reproduction of knowledge, to university-based training and thorough professional self-regulation; from a free-for-all exercise, to matters of high relevance for the states. The historical perspective should remind us that in spite of the fact that in the twenty-first century, medicine and public health have spread their knowledge throughout the globe, there are many countries at different levels of constituting their own health systems.

Alter:  Wait! I am sure you are *not* trying to say that there are countries with health systems that resemble the medicine practised by the Greeks or in the Middle Ages, right?

Ego:  Absolutely! Having reached the level of integration of communications seen on the global scale, obviously we do not find health systems

with the characteristics of the embryonic health systems of the past. No, this is no longer possible. But we may see absence or weakness in structures that were of crucial importance for the evolution of medicine at some point in its history. For instance, the establishment of guilds and professional councils, which exerted influence of great importance for the development of self-regulation independent of the universities. In countries where the number of doctors is very small, with sometimes only one doctor of a given speciality, it is very difficult to create such collective overseeing boards with effective general consequences for the quality of the services provided.

Alter:  I can also mention, for example, countries where doctors in rural areas work in isolation for years and hardly have a chance to meet and talk about medicine with other doctors.

Ego:  Good example! If there are no communications between doctors, they have to rely on themselves individually, practising the medicine they learned several years previously. Remember, the text mentioned the establishment of the routines of doctors and their students seeing patients together in the hospitals in France. They then introduced daily sessions of communications about cases, which is still very much practised everywhere. In countries like the ones you mentioned, doctors have little or no chance to benefit from such fundamental practices. Remember [smiles], the observer of the system needs to trace and investigate communications; communications are the lifeblood of the system. For the good of the system, doctors should communicate with doctors and other health professionals as often as possible.

Alter:  As we are running out of time, maybe you can say something about complexity and meanings.

Ego:  Yes, complexity is indeed an important theme but also a tricky one. Complexity is not an empirical object. It tells us more about the observational capabilities than about the observed subject. Complexity is configured where the system recognizes that there are many known unknowns

and possibly also unknown unknowns. The observer of systems should develop the awareness about the level of complexities possibly present from the point of view of all those who work in the system. Without measuring or translating complexities into some metrics – which by the way is not possible in the sense of complexity we use here – the observer can still reflect on the crucial steps the systems take. On one side, the system strives to reduce internal and external complexities where they can overwhelm the capacity of the system to process information, but on the other side the system looks for ways of becoming more complex, and therefore capable of addressing greater complexities in its environment.

Alter:  If I may elaborate on that, you can say whether I am on the right track. Let's see. When a health system opens a service it did not have before, such as radiotherapy, on one hand it becomes internally more complex, given the additional semantics introduced in the communications among professionals, which may not be understandable to many of them. On the other hand, the environment of the system also becomes more complex, because what was not recognized, diagnosed or treated previously now becomes part of the image of the environment the system deals with. The newly recognized diseases open a number of possible connections to causes and treatments; this will bring to the system new questions about what is going on in the environment and what the system is doing about that.

Ego:  In that way, complexities are simultaneously reduced and increased [smiles]. Tricky isn't it?

Alter:  Oh yes! Absolutely! So, let's handle complexities with care [smiles]!

Ego:  Let me give you another practical and real example of where the notions of complexity can be helpful. A middle-income country is going to get a loan from an international bank to purchase equipment for its 200 or so maternity hospitals. The country is struggling with high maternal and infant mortality rates, so the public health strategy is intended to decrease the risks. Well-equipped maternity hospitals with trained staff

are supposed to be able to change that picture. Initial estimates based on inventories and needs assessment of all pregnancies and births identified a staggering number of many thousands of items to be procured, including all sorts of devices and disposable medical items for wards, surgical theatres, intensive care units for mothers and babies, incubators and so on. Not only the diversity of items but also their quantities would represent a formidable challenge for the ministry in charge of the procurement process. Obviously, it was beyond the capabilities of the ministry to handle all the steps of specifications, tendering, selecting bids, agreeing contracts with suppliers, receiving and checking the items, and distributing them according to the needs of the patients. So, complexity had to be reduced. How was it done? The list of items was shortened to 30 essential items of high relevance in obstetric care [smiles].

Alter:  [smiles] Indeed that was quite a reduction of complexity!

Ego:  Luhmann has an interesting way of talking about complexity. You may have read it in the book and in the Advance Topics section. Complexity is vital for the systems, which need to find a balance between *redundancy* and *variety*. These are technical terms from cybernetic science.

Alter:  Too much redundancies and everything becomes rather boring [smiles]!

Ego:  [smiles] Yes, the system becomes complacent, so to speak. Although redundancies are useful for setting clearly where the system is and where it can return to in case of surprises, it may set the system on a risky path, when enforced internal repetitive unanimity may lead it to fatal errors while addressing new conditions in the environment. So, a balance between redundancies and variety has to be found.

Alter:  I could also say that too much variety and the system may get lost in the sense of being overwhelmed by the complexities it created internally.

Ego:  Perfectly said! And excessive internal variety can cause the system difficulties in dealing with the internal challenges. Imagine how difficult it could be to negotiate all the demands of those 200 maternity hospitals, when some got more and some got less; or some got what they did not need at all, while some did not get the minimum they needed. It would be really tough.

Alter:  And the interesting concept of "requisite variety" seems to be useful for grasping this topic, yes?

Ego:  Well remembered! "Requisite variety" is what a system needs to be able to make adequate and reliable internal representations of the environment it is dealing with. In our example, the staff to handle all the formidable administrative tasks, if the procurement went ahead based on the first estimate of needs listing thousands of items, would not have the "requisite variety" to be able to represent internally in the system all that would be necessary to communicate and implement that option.

Alter:  So... the conclusion is ...

Ego:  A public health specialist should be aware of these problems, particularly in cases where it is virtually impossible to estimate for each item or even sets of items the advantages in terms of decreasing the risks of the population at risk. The expert should make a general estimation of the positive impact of the investments and pray for the best [smiles].

Alter:  Yes, there are quite a lot of complexities to be reckoning with. This is where public health becomes art rather than science [smiles]. So, I guess, we can talk now about meanings, right?

Ego:  And meanings go hand in hand with complexities. Meaning is not a state of mind or something realized through introspection, or a psychological experience. No, in Luhmann's formal terms meaning is a distinction between actuality and potentiality. The actual meaning of a fruit is that it is not an apple, or pineapple, or watermelon [smiles]... If I say to

a blind man "there is fruit by the window", he will wait for additional ex-
planations to then select from all the meanings associated with the word
"fruit" those that may be meaningful to him. With additional informa-
tion he will then be able to associate meanings related to size, texture,
taste, weight, price, recipes, time to consume it before it is spoiled, and
so on. If I say "banana", he will attach a number of those extra mean-
ings, according to his experiences and interests. This is just an exam-
ple of what in fact many contemporary philosophers and linguists have
called attention to, highlighting the network of meanings fundamental
for making any particular meaning meaningful.

Alter:  Yes indeed, it is a banana [smiles].

Ego:  A meaning is the selection of an option among many possibilities.
The meaning is produced by the actual as opposed to all possible mean-
ings that are set aside and dismissed. So, meanings are immersed in
complexities. As communication is continuously flowing and dealing
with meanings, it is important to be aware that all meanings are made
by selections, and those engaged in communication are making selec-
tions all the time, both while uttering messages and receiving them.
A message is not assuredly a truthful conveyor of a precise meaning
because the two sides of the communication are independently carrying
out selections. So, if we work with communications, we need to be aware
of the meanings and contingent selections born of complexity that do
not always coincide as intended by the communicating sides.

Alter:  Perhaps we can leave that at this point and move on to the last topic,
perhaps the one you see as more important to be clearly understood.

Ego: Yes, thanks. It is very important to make clear that public health
works fundamentally with the distinction *at risk/not at risk*. The risk is
defined as related to a potentially undesirable health condition (or out-
come). We can say that "at" is about (refers to) the population showing
a certain vulnerability, or exposure, or being potentially harmed, by a

specific condition. This is at the heart of any preventive activity. Public health interventions only make sense if they reduce risks.

Alter: Yes, I guess this is fairly acceptable.

Ego: But the issue is that public health has to go outside the health universe of meanings to find the attributes of that "at" [smiles]. The characterization of populations is not a core matter of public health. It needs to borrow meanings from other fields of knowledge such as social science, anthropology, political science, economics, management sciences, legal sciences, systems science. What public health does is the precise characterization of the risk being studied, and then with the borrowed concepts tries to find out the possible factors present in the societies, the famous "social determinants of health", for instance. Public health cannot ignore the perspective of risk, which is the reason for its existence. Without attention to risk, public health narratives become narratives of the scientific domain the concepts come from. If, for instance, we talk about a particular health system in terms of governance, voice and accountability, environmental impact, and so on, without referring to how exactly that has an impact on the risks of getting some disease or not getting the treatment required, we will be making political speeches and statements for the media, not public health narratives. Awareness of this is important for all levels in the system.

Alter: Maybe you still can tell us something about "closure" as a valuable concept of the Social System Theory.

Ego: Closure is indeed another central concept of the Theory. By closure we understand that only health systems can make legitimate communications using the semantics recognized by the system. The historical evolution of medicine tells precisely the story of how doctors' communications progressively became the exclusive domain of doctors. We tell this story in the book. The semantics became increasingly complex and only recognizable by those adequately trained for communicating in those terms. The closure closes, so to speak (smiles), the semantic universe of

the discipline, making it exclusive to those entitled to use it. In that way, the system creates its internal environment of communications, where all meanings are distinctively used and also constitute the system's self-reference.

Alter:  Can I take this chance to ask: how precisely can this help a public health professional in the field?

Ego:  Wherever public health professionals are involved, they will be able to assess if the semantic closure has been properly established. This includes the use of the semantics only by those entitled to: the correct use of the terms; the correct articulation of the terms in communications between professionals; the appropriate use of the concepts in narratives to the outside; and so on. Public health programmes need clear and stable communication of meanings. Within the closure, those who are supposed to understand the communications should be able to do so. The closure is only partially made for keeping the outsiders outside [smiles], but it is mostly intended to ensure that those who are inside are indeed inside – are fully able to understand and participate in communications with the specific meanings of the corresponding semantic sets.

Alter:  I believe we covered the topics I had in mind. I understand that Social Systems Theory, as a theory, does not give us guidelines or protocols on how to proceed once we are in the field observing systems, nor does it give us frameworks for mapping contexts, processes or networks. Self-reference is not a trivial concept and self-observation brings a number of methodological challenges. Still, there are no step-by-step instructions on "how-to-do", or methods and procedures for data collection and data analysis in this book. Social Systems Theory rather indicates to us the orientation of the "second-order observation", which we may also call *ways of looking*.

Ego:  Well said! If I may add a point…

Alter:  Yes, of course.

Ego:  For the professionals operating within public health sub-systems, and inclined to look for inspiration in the social systems approaches, I would suggest exercising what you called *ways of looking*. Pay attention to communications – without them, there is no system. Pay attention to observation and observers; check who observes and who is observed, and how observations are communicated through the system. Check when self-observation and self-description are carried out; this will be self-reference at work. Also, keep in mind that the communications are making and reproducing the system at the same time. And finally, never lose sight of health risks and risk factors, keeping track of how communications about risks appear, circulate, reverberate through the system and are incorporated into the self-reference of the system.

Alter:  Ok! Thank you.