Chapter 5: Canguilhem and Foucault

The works of Michel Foucault and Georges Canguilhem add a wealth of contributions to the history of medicine, particularly social history and the evolution of medical ideas. In this chapter we do not provide a comprehensive summary of their work, nor do we discuss their views in detail, but they studied what we consider a crucial period in the history of medicine, where we can see the beginning of health as a social function system.

Therefore we take from their works the elements that in our understanding reveal the evolution of health systems from an embryonic to a functional stage. We set out our reading of these authors with conceptual references of the social system theory.

We also benefit from the abundance of historical materials they worked on, with vivid descriptions of the medical thinking of the times. Both addressed the late eighteenth and early nineteenth centuries: Canguilhem, reflecting the intense discussions about notions of the normal and the pathological, and Foucault with a broader reflection, addressing the marked changes in the way medicine approached its subject in correspondence to the transformations in the political and social context of the French Revolution.

From our point of view, the period revealed medicine in the process of expanding its self-references, struggling and redefining its subject in the face of important advances in the understanding of the structures and functions of the human body. At the same time, public health appeared at a confluence of political intentions with medical knowledge and practices, now sufficiently stabilized and complex. In this chapter,

we aim at making these processes visible from the material the two authors explored.

Both authors describe medicine "at pains" (our term), attempting to describe the "nature" of the diseases, which at the same time reveal and hide themselves from observation. Medicine was already able to talk with clarity about structures and functions of the body but was trying to figure out the possible existence of "norms" of how the diseases occurred in the bodies; "norms" that could make intelligible the courses and symptoms of diseases.

In a broader sense, the period shows exciting discoveries and discussions through which medicine was both constituting its new identity as a modern scientific endeavour as well as establishing itself as a society-wide provider of health services with political recognition. We start the chapter with Foucault, then move on to Canguilhem (as opposed to the chronologic order of their work), and then discuss the thesis we defend here of the constitution of health as a social system at the convergence of medicine and public health. The chapter ends with a conclusion.

Foucault

Foucault's book, *The Birth of the Clinic*, published in 1963 (Foucault 2003), was his third book. It reveals Foucault at the early stages of his career when he had not yet addressed the topics of power and history of sexuality, which made his social theory famous. The book is part of a collection presented as *archaeology of the knowledge* from his historical research. The subtitle of the book is *The Archaeology of Medical Perception*.

We focus on three recurrent themes appearing throughout the book: the *Medicine of Species*, the *Gaze* and the emergence of public health in the midst of the French Revolution. Foucault's highly poetical style makes the first two topics challenging. This is due to his excessive use of rhetoric metonyms and metaphors, and imprecise concepts. The third topic, however, reflects the fruits of his historical research; it is more factual and less conjectural.

Medicine of species

Foucault uses the word "species" frequently. He quotes authors referring to diseases as "species". We understand that the metaphorical use of the term "species" in reference to diseases cannot be adequately likened to its denoted original biological meaning. Those uses of the term expressed only an intent to group diseases in some way, rather than revealing any distinct essential characteristic of medical thinking comprehending a disease as an actual "specie" of some kind. We in fact see only a metaphoric expression of classificatory efforts, not the discovery of factual grouping of diseases.

But Foucault deduces that the likening of diseases to species had a deeper effect in the structure of medical thoughts of the time. The move to identify species in biological science could perhaps be transposed into medicine, and medicine likewise could then look for the phenomena compared to the biological models comprehending growth, reproduction and death, as plants and animals do. That was a stretch too far.

The terms "medicine of species" appears in 11 sentences. From our reading of Foucault, what is said about "medicine of species" in fact reveals in poetical language the intention to classify diseases and construct a nosology. Basically, with these terms Foucault talks about the nosology being developed by important figures such as Gilibert, Sauvages, Pinel and others.

Foucault seems to be fascinated by the likening of diseases with "species in a garden". He tries to delve into the classificatory mindsets of the time, following their struggles to link, make analogies, associations, elucidations, and so on, what was then known about the disease, devising a logical grouping that could prove reliable and helpful. To fully reject his emphatic use of the term "species" as well as his colourful descriptions of how thinking about species has influenced the thinking about diseases, one would need to dive again into the texts of the time and their meanings – a daunting, time-consuming task.

For us, however, the metaphoric use of the term "species", although being one among several possible inspirations for classification of dis-

eases, in fact obscures the differences between conceptualization of natural science (classifying animals and plants into orders according to stable morphological and functional criteria) and its possible use in medicine.

Certainly the idea of "species" had some appeal for the elegance and simplicity of the biological rationality. We can only conjecture whether the medical authors of the time understood the limitations of approaching diseases with species in mind. We believe they may have done so just because it would seem an obvious scientific approach at that time; in any case, the notion of medicine of species did not find its way into the history of medicine, and became irrelevant.

Foucault also talks about other types of thinking, which did not include "species", such as when medicine assumes a "statistical structure" (Foucault, 2003, p. 125), and its perceptual field becomes a "domain of events", no longer a "garden of species". And he acknowledges that "it is no longer a pathological species inserting itself into the body [...] it is the body itself that has become ill" (p. 167). Anatomical locations, "organic spatiality of the body" (p. 224), connections, proximities, were principles of nosological analysis used even previously in the seventeenth century. "Species", so to speak, was not the only or the main game in town.

Foucault says:

> „Until the end of the eighteenth century the gaze of the nosographers was a gardener's gaze; one had to recognize the specific essence in the variety of appearances. At the beginning of the nineteenth century another model emerged: that of the chemical operation – "*Instead of following the example of the botanists, should not the nosologists have, rather, taken as their model the systems of the chemist-mineralogists, that is, be content to classify the elements of diseases and their more frequent combinations?*"' (Foucault, 2003, p. 146)

He quotes Demorcy-Delettre, an author writing in Paris in 1818. Here we see a significant turn of events where he acknowledges the idea of medicine and the garden of species being replaced by other styles of classification for directing the nosological efforts.

For our analysis, the advantages of the classification of diseases was obvious considering how classes of diseases could facilitate the work of doctors, as prognosis and treatments would follow once the class was identified. This would simplify the tasks and reduce the complexities to be communicated. The class of the disease would say a lot about it and would make irrelevant the detailed description of signs and symptoms. So the analogy with "species" could not be more than a metaphorical attempt but the search for classificatory schemes was indeed very relevant.

To reflect on how little the idea of species could help the classificatory effort, we can make some considerations, which could indubitably be equally made by the nosographers of that time as well. An individual member of a species is a living autonomous unit in its own right; its life has a great degree of independence from the life of other members of the same species. While the independence of a disease in a body in relation to the same disease in another body holds a partial fulfilment of the conceptualization of species as individuals, diseases obviously could not be successfully recognized as autonomous living units. Diseases were studied as disruption in autonomous living human bodies, which were the true autonomous units in these cases.

While a member of a biological (animal or vegetal) species has the autopoietic orientation of reproducing itself, the same could not be said of diseases, as the anatomopathological alteration of a body, the actual disease, is not intended to reproduce its pathological form in another body. Even where infectious agents (not known at that time) aim at self-reproduction, the disorders they produce in the human body are not part of their "project", "intent" or self-reproductive aims; they are rather "undesirable and unintended upshot" that may even lead to the destruction of the invading agents together with the body hosting them.

Furthermore, as a logical construct, species is only the end point in a classificatory scheme. So, the effort to produce a scheme for the classification of diseases may have borrowed the term "species" (possibly a fashionable one at the time) where it could have used other terms such as "classes", "categories", "orders", "types", "kinds", "sets", "groups", "clusters", "families", and so on. Foucault's fixation on the term "species" may be of his own choosing or may be a reliable reading of the original texts;

nevertheless, that does not help to illuminate the main issue at stake, which is complexity reduction.

It is necessary to say that the use of metaphors carries the peril of diverting attention from the main objective, loading the topic with undertones and hints of an unrelated nature. The misuse of vocabulary does not help to reveal the fundamental feature of medical evolution of that time; it may have misled the audiences in Demorcy-Delettre's time as much as it did Foucault's audiences.

From a social systems perspective, there is nothing essential in the use of the term "species" that could reveal a stage in the evolution of medicine as a system; the classification efforts have been present since earlier stages of medicine as a scientific discipline, as those studying it were confronted with an overwhelming mass of descriptions of all sorts of disorders, hugely diverse in their forms and locations in the body. This was in effect the underlying motivation driving the classification aims and processes for organizing a complex picture.

Where could the effort of classification start? Classifications could be anchored anatomically as well as to observable symptoms and signs, as known etiological causes then offered a poor scheme to comprehensively assign diseases from different anatomical regions to the same causal categories. The visible signs and evidence detected on the surface of the living body or inside the dead body still relied on direct observations and descriptions, while causes remained unknown.

So we can say that there has never been a "medicine of species" as Foucault labels it. Diseases may have been conceptually characterized and understood as an entity, a being superseding and imposing itself onto the otherwise healthy body, causing the observable disruptions, but such ontological dimensions were too close to the superstitions and magical phenomena that scientific medicine struggled to remove from its semantics, for the sake of maintaining the tenaciously won and treasured objectivity, in words immersed in religious fervour and restrictions to think outside the religious dogmatic frames.

As the range of known possible causes of diseases was too narrow and unsatisfactory to speak about, language certainly offered shortcuts and convenient ways of quickly communicating what was otherwise a

difficult subject. The history of medicine is also the history of its struggle to communicate with precision and clarity exactly what was going on in the body, even if the causes were not fully known.

The use of the word "species" would perhaps provide concise communication for classificatory purposes, which could however make nosologies less convincing. It would take no longer for a medical scientist to say, "no, the nosology is not a scheme of classification of 'species', it is rather a scheme of anatomical and functional grouping of disorders seen in unhealthy bodies". Nevertheless, I cannot say whether that was the case and Foucault preferred his favoured metaphors.

The point is that we cannot settle with the idea of a "medicine of species" because over the course of medical evolution, if at some point there was a nosography that could describe its classification method as criteria for classifying disease species, that was not enough to say the period between the late eighteenth and early nineteenth centuries was dominated by such "medicine of species". Nosographies did not characterize medicine; they characterized only the type of complexity reduction strategy deployed with specific classificatory objectives.

Furthermore, species as a classification model implies ranking. In the biological realm, it is accepted that species belong to genus, which belongs to family, which belongs to order, and then class, phylum, kingdom and finally domain. In the eighteenth century, Linnaeus' taxonomy, the first recognized and adopted, had five ranks. Surely, it would be a formidable challenge to find the ranking or hierarchy that could explain a disease as a specie belonging to its respective genus, order, class and kingdom, as Linnaeus had proposed for living creatures. There would not be enough points to link the ranks and relatedness. Therefore, no one would be really serious about the endeavour of calling diseases "species in a garden". They probably knew they were simply making poetry.

In conclusion, clearing the field by removing distorting metaphors is part of the process of evolution of any science. The complexity reduction efforts are already arduous, and the metaphors obstruct the job by directing attention to unproductive tasks. Although the successful classification of species in biological realms may have inspired the use of similar criteria, the crucial task for medicine was the classificatory exercise

itself. Doctors knew they were dealing with different sorts of beings. This perhaps is in the end just an example of where Foucault's metaphors may not correspond to the historical facts or help us understand the mindset of the time.

The gaze and the clinical

Foucault is one of the first proponents of the term "gaze", which took on a life of its own and is now found with different connotations in postmodern thinking in fields as diverse as cultural studies, feminism, psychology, critical theory. The term "gaze" appears 209 times in the book. To trace all connotations, qualifications, forms, characterization, contradictions and relations the term has in Foucault's text would be an enormous hermeneutic task. There isn't a unique conceptualization that covers all uses of the term. We can say that the semantic meaning of gaze as looking, staring or observing is obviously part of the meaning wherever the term is used, but still these understandings do not at all exhaust the meanings indicated in Foucault's prose (maybe I should say poetry).

It is important to clarify two points before we start our discussion. First, we approach Foucault's utilization of the term gaze from the point of view of science, where we expect precision. A scientific "gaze", or the gaze of a scientific discipline, has to be seen differently from, for example, an artistic "gaze"; the gaze of the artist (or those appreciating a work of art) is surely different from the "gaze" of a scientist or those using scientific knowledge, in our case the medical "gaze". We cannot address here the debates about the different types of "gaze"; this is not our purpose. But the interested reader will easily find the corresponding literature.

The second point is a brief warning to the reader about the lengthy quotations of Foucault's texts we make at the beginning of this chapter. The reason for that is to convey to readers, particularly those not accustomed to Foucault's style and rhetoric, the feeling of navigating Foucault's narratives. The discussion of Foucault's statements about "gaze" and "glance" (see next paragraphs) may sound chaotic and in need of detailed explanation. But we do not explain each usage of the term; that

would be a tiring and time-consuming job with no valuable outcome. We just want the reader to feel how Foucault presented his views, at least at that early stage in his career.

The gaze comes with many attributes, possibilities and forms as the following short random sample of statements copied from the book demonstrates:

> "it is not faithful to truth, nor subjected to it" (Foucault, 2003, p. 45); "the gaze that sees is a gaze that dominates" (p. 45); "the unimpeded empire of the gaze" (p. 46); "a purified purifying gaze" (p. 61); "the unaided brightness of the gaze" (p. 61); "the gaze that traverses a sick body attains the truth that it seeks" (p. 72); "it is not the gaze itself that has the power of analysis and synthesis, but the synthetic truth of language" (p. 72); "for a language without words, possessing an entirely new syntax, to be formed: a language that did not owe its truth to speech but to the gaze alone" (p. 113); "gaze has the paradoxical ability to hear a language as soon as it perceives a spectacle" (p. 132); "this regular alteration of speech and gaze, the disease gradually declares its truth, a truth that it offers to the eye and ear" (p. 137); "A hearing gaze and a speaking gaze: clinical experience represents a moment of balance between speech and spectacle" (p. 142); "the gaze of the nosographers was a gardener's gaze; one had to recognize the specific essence in the variety of appearances" (p. 147); "the clinician's gaze becomes the functional equivalent of fire in chemical combustion; it is through it that the essential purity of phenomena can emerge: it is the separating agent of truths" (p. 147); "clinical gaze is a gaze that burns things to their furthest truth" (p. 147); "the clinical gaze is not that of an intellectual eye that is able to perceive the unalterable purity of essences beneath phenomena. It is a gaze that travels from body to body, and whose trajectory is situated in the space of sensible manifestation. For clinic, all truth is sensible truth" (p. 148); "Bichat's gaze is not a surface gaze in the sense in which clinical experience was a surface gaze" (p. 158); "The gaze plunges into the space that it has given itself the task of traversing" (p. 166); "the medical gaze embraces more than is said by the word 'gaze' alone. It contains within a single structure different sensorial fields" (p. 202); "The medical gaze is now endowed with a pluri-sensorial structure. A gaze that touches, hears

> and, moreover, not by essence or necessity, sees" (p. 202); "absolutely integrating gaze that dominates and founds all perceptual experiences" (p. 203); "Alone, the gaze dominates the entire field of possible knowledge" (p. 206); "in time, medical gestures, words, gazes took on a philosophical density that had formerly belonged only to mathematical thought" (p. 245).

To make matters even more complicated, on page 149 Foucault introduces the term "glance", and contrasts it with the term "gaze" as saying different things. Glance appears 16 times but only in chapter 7 with a specific denotation compared to gaze. Before or after that point, the term does not appear. We added below an unfortunately long quotation of his writings about glance; again, our justification is that it will give the reader not familiar with Foucault an experience of what we mean, and will also facilitate the comments we make afterwards.

> „The sensible truth is now open, not so much to the senses themselves, as to a fine sensibility. The whole complex structure of the clinic is summarized and fulfilled in the prestigious rapidity of an art: "Since everything, or nearly everything, in medicine is dependent on a *glance* or a happy instinct, certainties are to be found in the sensations of the artist himself rather than in the principles of the art". The technical armature of the medical gaze is transformed into advice about prudence, taste, skill: what is required is "great sagacity", "great attention", "great precision", "great skill", "great patience".
> At this level, all structures are dissolved, or, rather, those that constituted the essence of the clinical gaze are gradually, and in apparent disorder, replaced by those that are to constitute the glance. And they are very different. In fact, the gaze implies an open field, and its essential activity is of the successive order of reading; it records and totalizes; it gradually reconstitutes immanent organizations; it spreads out over a world that is already the world of language, and that is why it is spontaneously related to hearing and speech; it forms, as it were, the privileged articulation of two fundamental aspects of saying (what is said and what one says). The glance, on the other hand, does not scan a field: it strikes at one point, which is central or decisive; the gaze is endlessly modulated, the glance goes straight to its object. The glan-

> ce chooses a line that instantly distinguishes the essential; it therefore goes beyond what it sees; it is not misled by the immediate forms of the sensible, for it knows how to traverse them; it is essentially demystifying. If it strikes in its violent rectitude, it is in order to shatter, to lift, to release appearance. It is not burdened with all the abuses of language. The glance is silent, like a finger pointing, denouncing. There is no statement in this denunciation. The glance is of the nonverbal order of contact, a purely ideal contact perhaps, but in fact a more striking contact, since it traverses more easily, and goes further beneath things. The clinical eye discovers a kinship with a new sense that prescribes its norm and epistemological structure; this is no longer the ear straining to catch a language, but the index finger palpating the depths. Hence that metaphor of "touch" (*le tact*) by which doctors will ceaselessly define their glance. And by that very fact, clinical experience sees a new space opening up before it: the tangible space of the body, which at the same time is that opaque mass in which secrets, invisible lesions, and the very mystery of origins lie hidden. The medicine of symptoms will gradually recede, until it finally disappears before the medicine of organs, sites, causes, before a clinic wholly ordered in accordance with pathological anatomy." (Foucault, 2003, pp. 148–150)

We confess that after reading these paragraphs innumerable times our impulse was to beg for help. If gaze was already a slippery concept to grasp, on which we have been basically left to do the conceptualization work ourselves by grabbing bits and pieces we find along numerous mentions of the term throughout Foucault's book, glance sounds even more imprecise and exoteric. Each sentence is pregnant with poetical indulgence and the choices of words lead to countless questions. So we leave the "glance" here. We only mention it for the sake of offering the reader a hint of our puzzlement; we concede though that those used to Foucault's texts may feel comfortable with it.

As we said, the use of the term "gaze" occurs throughout the book, with new connotations constantly implied. It is hard to avoid certain dizziness and surprise at the verbal licence in using such poetic language. One could be tempted to dismiss the term with the justification

that is nothing other than a bunch of nonsense put together to confuse rather than clarify. Was it not for Foucault's status as a major thinker of the twentieth century, one would set the book aside and forget about it; as Annemarie Mol (2002 a, p. 61) says, "Foucault has been abandoned".

In many instances we do not know whether Foucault is talking about his views on how the gaze were performed then, or whether he is talking about what he thinks were the states of minds, or perceptions, or understandings, or intuitions of the doctors of the time; or whether he is trying to reveal cognitive structures (episteme) acting out at that time, or his understanding of how those structures could have operated then. We do not grasp his intention of whether he writes about the cognizance of eighteenth- and nineteenth-century doctors, or whether about his figurative representation of what the mind-set looked like for him.

The gaze is not a factual procedural thing; we may understand the gaze as a scheme of perception with selective functions and purposes; but we also see that it is a way of typifying how medics approached patients; but in this case, it is a mere artifice of communication that Foucault has invented to suggest a characteristic epistemological posture he believes existed at that time.

We may see the gaze as a caricature of observational approaches; one destitute of contours, uncommitted to an observational strategy for distinguishing one thing from the other based on formalized distinctions; a free approach for looking at anything – and let the "truth" speaks for itself; a naïve characterization of an unworkable observational technique, sustained by an affirmative will, supported from who knows where.

The word observation instead carries a sense of determination and clarity of limits to which gaze is not committed. We may argue that observation was in fact what the doctors and scientists did; they did it before that century, during that century, and have been doing it since – observation informed by distinctions that lead to the differentiations and selections of what was being observed.

From our point of view, the idea of gaze carries a problematic connotation of agency. In Foucault's discourse, it seems, the doctor is not the owner of the gaze. The gaze realizes itself through the doctors; doctors are vehicles, so to speak, and the gaze comprehends broader domains,

beyond the doctor's view. Doctors just channel expressions of that impersonal gaze. From our perspective, Foucault inverted the terms of the relationship. We consider that the doctor observes, is the agent of the observation; on the contrary, in Foucault's terms the gaze is the agent and the doctors its vehicles.

Foucault's metaphors seem to say that the gaze can make many forms appear as the eyes of the doctor scan the disease. The gaze as such is ungraspable. It has an overarching formless attribute that nevertheless can only take concrete forms through doctors' observations. The gaze does not have shape or temporality. The forms it generates are made corporeal and temporalized through observations; the forms are only traces of the gaze itself as the gaze evaporates once the observations are established and communicated. The observations survive in their spoken or written forms while the gaze vanishes. However, the metaphysical nature of such a gaze renders it useless as a concept. Observation is a more valuable concept. When we speak of observations, the agent and the act are clear, as opposed to talking about gaze, where neither is clear

But we return to Foucault's texts and keep the motivation to find in his work a portrayal of medicine of the time, describing its huge efforts to deal with the growing revealed complexities, as the bodies of patients were scrutinized when admitted in hospitals, as well as thoroughly explored in dissections and experiments. This was a time when universities offered institutional sites not only for teaching but also for examinations, reflections and investigations.

Inspired by Foucault's poetical imagery we can figure out the difficulties for the classificatory minds of the time in their attempts to find adequate keys and pathways for building a categorization of diseases. Although the number of identified diseases was far smaller than today, the consideration of the now 100-year-old International Code of Diseases (ICD) is still instructive of the dimension of the challenges. The ICD currently offers a "neat" version with more than 60,000 codes in 22 chapters according to groups of diseases and disorders (ICD 10 from 1990, Wikipedia). In simple terms, any classification effort would have to make decisions, privileging one of the several interconnected dimensions, such as the topographic (by region of the body); the anatomical (by

tissues or organs); the physiological (by function and effect); the pathological (by processes of diseases); the etiological (by causal factors); the legal aspect (by attribution of responsibility); the epidemiological and statistical aspects (by occurrences in collectivities). It is hugely complex, and was certainly already sizeable 100 years ago, at the first publication of ICD.

We thus conclude that, if we want to preserve the term gaze and find some sense in its use, we may consider it as denoting orientation, as indicating an intention to observe although not fully equipped with the determination of the elements to be scrutinized and hopefully found. The observation directionality is not fully explained in the gaze, which only intends to suggest the configuration of the observation while not making explicit the exact points to be observed.

The gaze thus establishes that there is a doctor in front of a patient; both understand something is not going well with the patient and should be investigated by the doctor. The gaze sets the context and configuration where the attention is to take place, while the observation sets the directionality of the attention to the objects (signs and symptoms a patient may show or complain about), examining them in their minutiae. The gaze is prompted by the intention to set in motion a relation between doctor and patient, while the observation is the concrete act of looking at the body and searching for diseases. The gaze is sociological, so to speak, while the observation is epistemological. The gaze wants to be recognized as such, while the observation wants to recognize what it observes. The gaze is accepted and recognized by both sides with each performing its role in the tacit or explicit agreement, while the observation is the doctor's prerogative, with the doctor choosing where and how the observation must be carried out, without requiring the understanding of the patient.

The gaze counts with patients who want to be looked at and expose themselves to the attentive eyes of the doctor, who on the other side wants to look at the bodily expressions of the complaints of the patient. Observation, on the other hand, may be carried out independently of specific requests by the patient, who may be unconscious, sleeping, anaesthetized or even revealed in laboratory results and images dis-

cussed in clinical meetings, far away from the actual body. In autopsies there is no gaze, only observations. Gaze is relational; it is a relationship. Medical observation is unilateral. Gaze is a compromise between looking and being looked at, where both sides participate and more or less accept the engagement.

Doctors talking to each other would never express themselves in terms of "I gazed at the patient and my gaze identified consistency of such and such structures seen in the Magnetic Resonance (MIR) of such pathology". They would laugh at each other. But surely they will go deeper if one says: "I observed such and such alterations in this MIR". This example (which illustrates the agency problem discussed above) helps to clarify why the term gaze has a peculiar meaning, which does not correspond to routine communications among health professionals. Likewise, the word glance would not be helpful; it would convey an idea of superficiality, haste, and perhaps neglectful browsing.

If this is correct, the gaze is as old as medicine, instead of a characteristic of the medical development stage of the eighteenth and nineteenth centuries. On the other hand, medical observation, although also as old as medicine, has evolved along with it, with new categories, distinctions and procedures, characterizing each evolutionary stage's observation capabilities.

Inspired by Foucault, this is the best and most poetical way I could find to explain my understanding of the gaze. However, I should say that I do not claim that my understanding of gaze to any extent corresponds to Foucault's meanings; I cannot claim that I understood him correctly and that my comprehension is fully based on all he has said about gaze. I do not know how close I am to him in his attempt to write a history of the ideas or where I might have "abandoned" him. However, I do not feel the need to clarify that any further.

The French Revolution and its health concerns

Chapter 5 of Foucault's book (Foucault 2003), *The Lessons of the Hospitals* brings a rich description of the revolutionary processes related to the training and practices of medical professionals. The authorities then be-

came invested in regulating entitlements and provision of care. In the revolutionary spirit of curbing the benefits and beneficiaries of the previous regime, healthcare and health professions became objects of attention both to eliminate spurious or suspicious practitioners and practices of the old regime, together with the corporative organization of the medical profession of the time. The French Revolution reasserted the right of the masses to healthcare. Foucault describes these political processes in detail.

In the context of the Revolution, the newly installed powers seeking to end the privileges of the monarchy, including by the closure of universities, brought attention to the masses of destitute and the obligation of the Revolution to address their needs. The reflections on this development perhaps had a decisive influence on Foucault, linking political power and medicine as strategic alliance to strengthen the power of the state.

According to Foucault, the elected Assembly of the Revolutionary Government (National Convention) received requests to intervene in the exercise of medicine by charlatans and incompetent doctors as an urgent matter for the protection of the citizens. Foucault mentions the "Comité de Salut Public", taking a decisive role in drafting bills disciplining the medical profession. He also mentions that: "from all sides demands flowed in for proper control and supervision" (Foucault, 2003, p. 80).

The political processes unfolded over the course of about a decade, with several conflicting interests struggling around regulatory matters of control over professional licensing, the role of hospitals and the organization of care within them linked to training activities.

The subjects and content of training courses were then revised and defined for each year of study in medical school. Doctors' visits to the patients accompanied by students and subsequent discussions were instituted as routine processes. Clinical practice thus defined was balanced against theoretical studies of the texts, which became less prominent than before.

The initiatives developed in the context of the French Revolution show health becoming a matter to be dealt with by the political system;

the political system became aware and was pressured to provide answers to the social expectations and political voices that saw health attention as a matter requiring supervision, organization and orientation by the state.

This implied an irreversible transformation of medicine from a job for the elites (with charity as an aside) to an obligatory topic of social policies. If medical doctors lost some privileges granted by the previous regime, medicine on the other hand became solidly entrenched into political projects as the revolutionary process unfolded:

> „The enlightened classes, the intellectual circles, who had returned to power or obtained it at last, wished to restore to knowledge the privileges that would be able to protect both the social order and individual lives. In several cities, the administrations, "affrighted by the ills that they had witnessed" and "afflicted by the silence of the law", did not wait until the legislature had made its decisions: they decided to establish their own control over those who claimed to practice medicine; they set up commissions composed of doctors of the Ancien Régime, who would pass judgment on the qualifications, knowledge, and experience of all newcomers." (Foucault, 2003, p. 81)

In this description we see that medical doctors arrived at a position of self-regulation, now with a broader scope. In that process we can say that public health was established as the articulation of policies and healthcare services, with medicine providing care within an overarching policy-defined framework.

We nevertheless understand that was not the birth of the clinic as the title of Foucault's book indicates, as the clinic had already existed for centuries, as taught medical practice combining established knowledge with the still rudimentary treatments available. Instead, we understand it was the birth of the health system, as a differentiated system coupled with the political and legal systems.

The health system as a composite of medical sub-system and public health sub-system was thus established, with the drafted regulatory framework defining who was and wasn't entitled to practise medicine,

who could receive medical attention in the country, and how the medical profession could control and deliver training programmes (only doctors could train students to become doctors). The following passages copied from Foucault (2003, p.90) gives a picture of the on going spirit:

> "Article 356 of the Directoire Constitution declared that 'the law supervises those professions concerned with the health of citizens'; it was on the strength of this article, which seemed to promise control, limitations, and guarantees, that all the polemics were conducted."

> "[…] the controversy was centered mainly around the question as to whether one should first reorganize the system of teaching, then draw up the conditions for the practice of medicine, or, on the contrary, first purge the medical body, define the norms of practice, and only then decide what form medical studies should take. Between these two theses, the political division was clear-cut; those least removed from conventional tradition, such as Daunou or Prieur de la Côte-d'Or, wanted to reintegrate the officers of health and all the amateur practitioners of medicine by providing a very open system of teaching; the others, around Cabanis and Pastoret, wanted to hasten the reconstitution of an enclosed medical body. At the beginning of the Directoire, it was the first group that had most support."

The political push was crucial to create the conditions for self-reference of the health system, now comprising all necessary features. Although Foucault does not speak of social systems, self-reproduction or self-reference, his rich description of the historical processes allows us to see the genesis of health systems from the perspective of the social system theory.

The French Revolution therefore created the context for definition of the social role of medicine. The political system was acting, and doctors interacting with it, to achieve objectives as the opportunities appeared in the awakening of revolutionary "politicization" of all topics concerning the population and the state, without limits to where the state should stop. Everything was up for grabs in the sense that it was in need of or

vulnerable to interventions and state regulation. The old order collapsed and a new order was being built from scratch.

Health was not yet a system, so it did not have autonomy and the political system therefore intervened in everything. At early stages in the process, doctors perceived the chances and the need to take some control. The revolutionaries accepted it because medicine was too complicated a matter for them to decide upon. So the political system took on the role of regulator and the doctors performed acts of self-regulation. That was a key contribution of the Revolution. The political process unfolded while other evolutionary processes were also unfolding in the field of scientific medicine, medical practice and training.

Foucault describes medical professionals managing to acquire voice and influence over the course of the decisions the revolutionary government put in place. The main concerns were with the training of doctors, control or elimination of charlatans, mobilization of professionals to meet the needs of the military fighting a war, as well as hospital institutions for the treatment of wounded soldiers and the population lacking resources.[1]

From the Social System Theory point of view, what is essential in the French Revolution and the genesis of health as a social system is the political constructions (with doctors' engagement) defining how medicine should be provided, to whom (the population to be covered) and how doctors should be trained and allowed to practise. These constructions were carried out through regulatory instruments, projecting the image of the system, through which the system could create its self-identity. Professionals knew they became members of a system that regulated, organized and supervised their activities. In that construction, they themselves were designers and executioners of the acts of systemic order. The identity thus created was self-identity, in the way that it set clear social

1 In "The *Officiers de Santé* of the French Revolution: A Case Study in the Changing Language of Medicine", Maurice Crosland (2004), presents a detailed description of the processes unfolding during the Revolution concerning the definitions and regulations of health professionals.

distinctions and boundaries for those who could see themselves as being part of the order and those who could not.

Identity was not only a tautological matter but also distinguished precisely what society would get – how the system would be constructed, comprised of distinct parts such as recipients of medical attention and people with entitlement to it (or not). Self-reference, and its opposite side, hetero-reference, thus emerged together with the health system (hetero-reference being the necessary other side of the distinction).

Medicine had reached the stage (given the semantics and complexities that it developed) where only medicine could define medical values. This is the constitutional basis of the health system. The political system could create the political space for it, recognizing medicine's own semantic closure and complexity, but the closure itself had to be created and reproduced by medicine itself. The doctors had to be fully on-board with the decisions the Revolution was making.

In our understanding, as explained in other sections in this book, medicine appears as both a sub-system in the scientific social system and a sub-system in the health social system. As a sub-system, medicine has the systemic self-reference attribute to designate what are medical matters – that is, matters that medicine takes to itself as being of its exclusive concern. Medicine thus defines itself by taking on itself the notions of what it is about. Only medicine has the authority and legitimacy to say what it is and what it is not. All that came fully into being with broader political and legal confirmation in the French Revolution.

Canguilhem

Georges Canguilhem's book *The Normal and the Pathological* takes us to the debates of the late eighteenth and early nineteenth centuries and the difficulties of the time in relation to the characterization of normality in medical matters. There was a quest to distinguish the signs and symptoms of diseases, the thresholds for moving from one to the other, and how to treat them.

Canguilhem shows us the struggles in medical thinking to find the order, the schemes, structures, to clarify the nature of normality and of its opposite, pathology. The questions of where the normal stands, where and how pathology settles, and how normality and pathological phenomena interlink with each other, perhaps sharing the same essence, evolving from one to the other, or inhabiting the same body in discontinuous, segmented and mutually influential interferences, succumbing or fighting one another off; these were all puzzling questions.

The advances in anatomy, physiology and pathology, with detailed descriptions and large numbers of recorded cases, made those questions more challenging than they had ever been. If, for example, since the Greeks, the four humours framework had settled enquiries, however unsatisfactory the explanations may have looked, the abundance of new materials and knowledge sharpened the senses and led to the need for more reliable understandings.

In a context where other sciences were showing outstanding advances and the logic of scientific rationality was celebrated as the way of knowing and answering any question about the world (including diseases), the disquiet led to thorough reflections on the nature of the phenomena being studied: health and diseases.

The context was no longer amenable to superficial explanations and rudimentary models. The complexities revealed inside the bodies demanded equally complex and comprehensive explanatory models. Canguilhem discusses the reflections of the most prominent thinkers of the time.

We can here just briefly mention some of the names and the points that arose in Canguilhem's book. Our purpose is not to write a review of the book; we aim at considering the struggles discussed by Canguilhem from the point of view of the Social Systems Theory. He described the evolution of the health system at its birth, where the semantic binary opposition healthy/sick took the form of normal versus pathological.

Canguilhem (1978, p. 20) discusses how at that time the theme of "the real identity of the normal vital phenomena and the pathological" was the object of investigations to be settled in quantitative terms, despite

the apparent radical differences. This theme and related ideas were at the centre of the controversies of the period.

August Comte (building on François Joseph Victor Broussais's work) and Claude Bernard are the prominent pioneer thinkers in Canguilhem's narrative; Comte departed from the pathological to explain the normal while Bernard proceeded in the opposite direction, although both maintained the same point of view that the normal and the pathological were phenomena of the same nature.

"The diseases are only the effects of mere changes of intensity in the action of the indispensable stimulation for the preservation of health" (Canguilhem, 1978, p. 26) was a vision inaugurated by Broussais (eighteenth century) in opposition to the then current understanding of the ontological distinctiveness of health and sickness as two separate entities. According to Broussais, and maintained by Comte, pathology is the normal physiology under the stress of over or under excitement. The pathological can be traced to quantitative variations on what a normal body handles – as Canguilhem (1978, p. 74) notes, the "real homogeneity and continuity of the normal and the pathological".

Bernard considered medicine the science of diseases and physiology the science of life. Rational therapy can only find its basis in a science of pathology, which nevertheless has to be based on the science of physiology. However, physiology and pathology cannot be separated and are essentially the same thing. Bernard opposed the idea, popular among many at that time, that diseases have extra-physiological elements.

The discussion of the unit of the normal and the pathological appeared animated by the advances in physiology's aspiration to find quantitative explanations of the differences between the normal and the pathological. In contrast, the Hippocratic tradition did not delve deep into such concerns as its interests were focused on describing external observations of sick bodies. Diseases had an implied ontological nature, which persisted until the conception of identity and quantitative differentiation was formulated in the period covered by Canguilhem.

Furthermore, René Leriche (nineteenth century) another author to whom Canguilhem dedicated close attention, is quoted saying: "health is the life in the silence of the organs"; "diseases is what disturbs the men in

the normal exercise of their life and occupation, and above all what make them suffer" (Canguilhem, 1978, p. 63). According to Leriche, the body has more physiological capacities than is usually known, and diseases are necessary to reveal them; in other words, the body has more capacity than required to keep living.

Medicine seemed to have changed from the idea of the confrontation of opposites to the idea of a unit, with variations of continuity and discontinuity, leading to the notion of health and sickness as a continuum. But the complexities were not amenable to easy and simple explanations in terms of such variations.

The question whether the pathological state was or was not just another expression of the normal physiology was apparently settled but other thinkers approached the topic differently. Xavier Bichat, also mentioned by Canguilhem (1978, p. 93), was a prominent figure in the period and contributed to strengthening the distinctions: "in the phenomena of life there are two things: 1 the health state and 2 the sickness state: from that appear two distinct sciences, the physiology, that works with the first, and the pathology, that works with the second".

However, if the distinction between normal and pathological could instruct on how to approach patients and diseases, the arsenal for identifying etiology and causes was insufficient. Although the concept of etiology had existed since medieval Islam, medicine was observing complex phenomena, but not so much their causes.

Canguilhem also referenced Adolphe Quêtelet and his anthropometry. Quêtelet worked on the quantification of what is normal or not in human health. The true mean offers ontological distinctiveness, constituting a norm. Discussions were then opened in relation to the "median man" and the variety of factors (among them biological, social, environmental) influencing human anthropometric characteristics and the suitability of such measurements for the definition of normality and abnormality.

Surely such close attention and intense discussions of the nature of the normal and the pathological had to be revisited in face of the discoveries that followed. The cells, the tissues, the germs, the hormones, the

genes and so on – all new discoveries placed questions of the normal and the pathological on new ground.

Etiological findings changed the conception about the nature of health and disease. When Louis Pasteur entered the scene, for instance, his germ theory redesigned the horizons separating the normal and the pathological. The reaction of an infected individual could not be classified as abnormal as opposed to normal, as a normal body was reacting normally to an invasion of external organisms. Abnormal would not be an appropriate word in such a case. The physiology of a patient with an infection is not essentially different from that of a non-infected individual.

For another condition, but also putting the concepts of normal and pathological under stress test, Canguilhem (1978, p. 104) says: "All the functions of an hemophilic are carried out as in healthy individuals. The only difference is that the hemorrhages are endless". This is another example of how fluid the terrain was when the concepts of normality, abnormality, health, pathology, diseases, and so on were trying to settle.

From our point of view, Karl Jaspers, also quoted by Canguilhem, seemed to move the controversies in the right direction, away from the rather complicated dialogues about where the normal stops and abnormality starts. Jaspers said: "the doctor is who less enquires about the meanings of the words health and sickness. They are concerned with the vital phenomena". "The 'sick' is a general concept without value that comprehends all negative values possible" (Canguilhem, 1978, p. 88). According to Jaspers, what is desired in terms of health from a physiological point of view is evident, and this adds to the notion of stable recognition of physical infirmity.

These examples, in fact only a small sample of the controversies addressed in Canguilhem's book, are only intended to illustrate the evolutionary stage of medicine, when it became able to discuss crucial notions of health and sickness, and to keep the topic open to further considerations as the knowledge advanced. Medicine's internal environment allowed it to have such key discussions and not be discredited by such critical processes. From the social health system perspective, this is evidence of medicine becoming skilled in addressing its most difficult and

contentious issues, while preserving its coherence and integrity in the midst of radical controversies. Our thesis is that medicine had therefore reached its "adulthood" and the health system was ready to be born after public health entered the scene.

Health system

In this section we discuss Foucault's and Canguilhem's points from the Social Systems Theory perspective. In line with the theory, the health system as a function system is based on a binary distinction, in this case, healthy/sick. The discussion about the normal and the pathological back in the nineteenth century and earlier was therefore a constitutional basic polemic, so to speak. It was necessary to make that distinction, bringing it to reasonable operational stability and consistency, although this did not require settling rigorous and precise definitions that could characterize the limits between the two sides of the distinction.

The systems theory states that a distinction should be established without a third term: one could be either healthy or sick (likewise, in the legal system, a judgment should be whether an act is legal or illegal; in the political system, the political statement should be of the government or the opposition; in the system of art, a piece is recognized as art or not; and so on); a social system would not be able to handle a third term. Even if the movement from health to sickness (or vice versa) cannot be precisely traced and the crossing point indicated, the crucial issue was (still the critical one) to assign the individual to either of the categories, so the health system could operate (communicate) accordingly – that is, on the side of sickness. There should not be any in-betweens. Canguilhem makes visible this tension in his historical analysis, although he did not have the Social Systems Theory among his references and was not trying to argue in that regard.

In relation to the fundamental binary distinction that is the basis of social systems, a long discussion can be held on the meaning of normal (in accordance with norms) and their opposite. Both Canguilhem and Foucault are interested in the genesis of that notion and its implica-

tions and ramifications. Canguilhem is more concerned with the medical theme of normality and Foucault, in his subsequent works, more interested in power effects of norms and how medicine became part of strategies of disciplinary coercion applied through different methods in society. An in-depth discussion of these themes would take us far away from our main focus. However, a few additional points can be made.

Social Systems Theory does not delve into the theme of normality, which is a slippery concept. There is a huge diversity of meanings associated with the word normal. It may appear in the medical discourse, for instance, in reference to the pulse of a patient and results of tests and examinations, but apart from strictly observed and measured parameters, normality are not where medical attention should focus.

Etymological studies tell us that the Latin word "normalis", the origin of the word normal, had its meaning in carpentry, denoting the fitting of a pattern of angles, without connection with the meaning of norm (juridical form), which then added the connotation and correspondence to a value system. From the matching with the notion of value, normal was introduced into the medical vocabulary, meaning agreement with a given pattern, referring to bodily measurements such as height, weight, pulse) – without prescribing normative connotations but rather simply identification of deviations.

However, the actual diversity of meanings of norms can be illustrated with the ten different meanings for normality in mathematics alone. In general, Wikipedia would tell us, there are eight fields of science and technologies using the word normal, each with specific meanings. In the common language there are around fifteen different synonyms. Normality, normalization, norms, normative, anomaly, normal, abnormal, all these terms can be used to convey specific technical references in specific fields of science or technology.

The distinction of normal and its opposite, abnormal, does not seem therefore to suit the operations of a health system. In fact, the health system is not based in such binary distinctions, and this cannot replace the healthy/sick distinction. Although the term normal is often used in any health system, it always refers to a standard (often quantitative), which indicates thresholds and limits of the two sides of the distinction. The

blood test or blood pressure is normal, we may hear health professionals saying, meaning it is within the expected parameters. This conforms to the general use of the term normal in whatever technical field it is used – denoting conformity with established adopted limits and parameters.

As a disease affects the body, it would be an inappropriate stretching of the term normal to apply it beyond the technical parameters it refers to. Abnormality, on the other hand, would suggest something different – perhaps that the whole body does not correspond to human characteristics, like an anatomical monstrosity (Canguilhem, 1978, p. 98). Let's say therefore that abnormality would denote a very severe occurrence, rare and strange, not necessarily recognizable as a classifiable disease.

On the other hand, the discussions of that time seemed to have settled with the understanding that the pathological could not be a synonym of abnormality or something in clear contrast with the norms. Pathology was thus recognized as possibly being another facet of normality, being part of the repertoire of the body's physiology. While something seems not to be healthy in a particular body, many other observed variables might be perfectly within the expected parameters; yet the person is undoubtedly ill.

For all of that, and for the "heavy" denotations and connotations of the term "norm", a health system would be on more solid ground in avoiding the normal/abnormal distinctions. Normality and norms would also open the semantic space to a lot of confusion, as both words are widely used in other fields. The word "normal" would be loaded with connotations while the binary opposition health/sickness is not "disputed" by any other field of knowledge.

A final word on the notion of "norm" as Canguilhem uses it is necessary. He discusses the theme ad nauseam in his book, covering a lot of ground. However, we think he left something unaddressed. As we said previously, norm appears in many areas of knowledge. A "juridical norm" about legal processes and legal normativity is an arbitrary convention in the sense that it is the result of a collective decision without any essential foundation in the world. Therefore it is contingent and changeable. The same can be said about any prescriptive, conventional, technical norms.

In this sense, a "therapeutic norm" is also the fruit of decisions; surely it should have a foundation in empirical observations and should be justified as much as possible without resorting to arbitrary convention or judgement. Therapeutic norms (such as the evidence-based clinical guidelines) are intended to facilitate medical decision-making where a doctor's knowledge may need support. Sometimes the norms are issued for economic, cost-containment reasons, but still must have strong medical rationale, carefully weighting the causal relations at stake. Therapeutic norms may also be contingent, but surely less so than legal norms.

Canguilhem calls therapeutics "normative activity", addressing notions of the physiological functions as norms of the living body, which takes him far away from the sense that normativity is the business of human beings deciding which norms they want to put in place. Biological organisms do not follow "norms". Contrary to that he says, "medicine uses results obtained from all other sciences to serve the norms of life" (Canguilhem, 1978, p. 176). We would question this: there is no such a thing as "norms of life", unless one is talking about enacted regulations.

To be acknowledged and followed, norms need to be written and communicated. The denotation of convention has been carried by the word "norm" since its oldest etymological use. In Luhmann's (2008b, p. 54) terms, "norms stabilizes expectations"; norms are enacted for that end. Biological blind determinism does not obey norms as such; norms always carry the idea of observability (compliance can be checked) and contingency (they can be established differently). So, we would say that the health systems did a very good job for themselves by avoiding the conundrum of the concepts of norm, normal and normality, building a semantic architecture using the exclusive binary distinction healthy/sick, however imprecise it may sometimes look.

Conclusions of the chapter

These conclusions bring the Social Systems Theory to the foreground; the section is organized in three parts: in the first we revisit Foucault's ref-

erences to the Greeks; the second focuses on complexity and meanings at the beginnings of the health system; and the third talks about the consolidation of the social health system.

Foucault and the Greeks

"[F]ifth-century Greek medicine would seem to be no more than the codification of this universal, yet immediate, clinical medicine; it formed the first total consciousness of this clinical medicine" (Foucault, 2003, p. 66). Foucault is clearly admitting that clinical medicine existed from Greek times. Maybe the title of his book could therefore have been "The birth of the gaze", as he tried to characterize the way clinical medicine started to be practised in the late eighteenth and early nineteenth centuries. Yet in the same paragraph on the advent of clinical medicine he says:

> "but insofar as it organizes it into a systematic corpus in order to facilitate and shorten the study of it a new dimension is introduced into medical experience: that of a corpus of knowledge that can be said to be, quite literally, blind, since it has no gaze".

If we understand him, he meant to say that the systematic recording of cases in a written "corpus of knowledge" (which, according to historians of Greek medicine was to serve as a reference for subsequent observations and recording) was "blindfolded", requiring continuous reading of descriptions in the texts. In consequence "it did not have a gaze". If we understand Foucault correctly, the clinic that started in those ancient times was "clinical" but "without gaze". How could that be possible? According to historians of the Greek period, the Hippocratic Corpus had rigorous recommendations for observing and describing the manifestations of diseases in the body. How could the doctors observe without "gaze"?

We have already spoken a lot about "gaze", so we only made this point here to restate our conclusion that what really appeared in the eighteenth and nineteenth centuries in France was the systematic assembly of medicine as an established distinctive university-based

medical knowledge/profession, and the political orientation to regulate training, practice and distribution of medical services; this orientation constituted a nascent public health function. This was the beginning of health as social system.

Despite Foucault's praise of the period, the systematic and careful attention to diseases and descriptions of what was observed obviously did not appear for the first time in the eighteenth and nineteenth centuries in France. Scientific medicine in Hippocrates' Greece emerged with the attentive observation of external expressions of the diseases followed by detailed descriptions of what was observed. Although the period Foucault studied benefited from routine autopsies and studies of corpses after death, which allowed the observation to venture deeply inside the body in search of connections between clinical and post-mortem findings, observation of the surface of the body was part of medicine from its very beginnings. Thus Foucault exaggerates the historical occurrence, and the "birth of the clinic" actually happened many centuries before. Looking at sick bodies as far as the rules of the time allowed, the scientific medicine started by the Greeks had to comply with observation constraints existing from its very start. By the same token, the doctor/patient frame of interaction always coexisted within the feasible limits of observations and practices.

Foucault in fact does not talk much about the Greeks, and only makes few references to Hippocrates. He compares the Hippocrates observation with the "pure gaze" and the new observation style of the period he studied as "at the same time" "pure gaze" and "gaze equipped with […] logical armature", following simple "empiricism":

> „"Hippocrates applied himself only to observation and despised all systems. It is only by following in his footsteps that medicine can be perfected". But the privileges that the clinic had recently recognized in observation were much more numerous than the prestige accorded it by tradition and of a quite different nature. They were at the same time the privileges of a pure gaze, prior to all intervention and faithful to the immediate, which it took up without modifying it, and those of a gaze equipped with a whole logical armature, which exorcised from

> the outset the naivety of an unprepared empiricism." (Foucault, 2003, p. 131)

And he continues: "In the clinician's catalogue, the purity of the gaze is bound up with a certain silence that enables him to listen. The prolix discourses of systems must be interrupted: 'All theory is always silent or vanishes at the patient's bedside'".

Although we can see in these sentences his recognition of the predominance of empirical observation in Greek medicine, he does not admit that there were no other options then; the first empirical systematic observations had to be on the surface of the body and could not be anywhere else. However, his remarks remain problematic. This combination of having a "catalogue" and being silent at the "patient's bedside" makes a poetical construction with which doctors most certainly would not identify.

Theoretical and rational frames of observation, in any scientific endeavour, or any technical undertaking, require a continuous reflexive and recurrent process of going repeatedly back and forth, looking at the evidence in signs and symptoms and corroborating those observations with the organized textual categories of knowledge. The silent gaze goes nowhere if its steps are not diligently and continuously constructed, followed, revised, communicated and repeated by the observing doctors, often resorting to the texts they may have at hand; this could not have been different, and never was, unless there were no texts and no peers to dialogue with, and consequently no scientific medicine.

Complexity and meaning surplus

From the seventeenth century onwards, medicine used very rich descriptions. From the social systems perspective, the available semantics comprehended an inventory of anatomical descriptions as well as identified signs and symptoms with which doctors could communicate their observations. To illustrate the context, Andreas Vesalius' book *The Fabric of the Human Body*, published in 1543 and 1555, held detailed descriptions with hundreds of illustrated pages covering all anatomical features of the hu-

man body. The use of such wealth of descriptive terminologies depended on the doctor's abilities and training and also on the contexts where the communications took place among peers, trainers and trainees. From a social system perspective we can say that in the eighteenth and nineteenth centuries medicine had gathered, so to speak, an excess of *potential descriptors* of a disease being observed.

The extensive vocabulary describing structures and functions of the body could be articulated in many ways, producing interpretations that, however tentative, as they could not easily be empirically confirmed, constituted a formidable requirement for consistent medical communications. That surplus of signifiers (anatomical, physiological and pathological descriptions) available to doctors nevertheless still had fragile notions of causal links and relations.

Besides that, treatments were scarce and of low efficacy, with the same procedures (such as bloodletting for example) indicated for countless different types of disease. We can therefore see that there was a peculiar configuration with, on one side, a rich vocabulary and repertoire of descriptive terms, and on the other side, very poor means for verification of diagnosis hypotheses and corresponding treatments.

At that time, there were in Europe many examples of successful advances in scientific fields. That encouraged scientist doctors to experiment and investigate. The quantification of physiological phenomena, for example, had many followers, although qualities such as dryness, ardour, debility, discharge, excitation and tiredness, and subjective expressions of disease (Foucault, 2003, p. 14) were challenging for efforts at quantification.

We could say that the context reveals medicine as a hesitant science in the process of development, trying to find possible ways of moving forward. Tentative semantics could articulate communicable sentences, meaningful and well-understood constructions to be further discussed, articulated, accepted, replaced or dismissed. This was in fact happening in the universities and hospitals on a daily basis, wherever doctors were working. But the conclusions in terms of causality and the results in terms of treating patients remained poor.

Foucault does not employ notions of complexity or complexity reduction, concepts often appearing in Luhmann's texts. However, complexity is a key concept for understanding the period. Complexity reduction has to be obtained with selections of what seems relevant in a given patient, and also selections of what is characteristic of diseases already known, as described in the texts. At that juncture, there is a medicine on one side with a mass of findings related to the human body (anatomy, physiology, pathology, and so on) and on the other side a mass of evidence and descriptions of countless patients admitted into hospitals. The selections to be made were becoming increasingly demanding.

The experience of the hospitals increased the turbulence of the seas medicine was navigating. The quantity of patients in close contact, perhaps affecting the diseases the patients already had, was an additional source of complexity to be considered in what was observed. This complex context could be overwhelming, demanding doctors' attention to too many possible signs and symptoms of disease, and also factors of the environment and the procedures.

In short, anatomical, physiological and pathological studies progressively ventured into highly complex inner worlds, accurately describing them. The deepening of the observations produced correspondingly highly complex descriptions of everything being observed. Medical semantics became increasingly differentiated, sophisticated and demanding for all who aspired to be part of the profession and be recognized as such.

These two processes – the recognized complexity of the body and its diseases and the corresponding complexity of the medical language – called for systemic solutions. The new corpus of knowledge needed to be protected and reproduced with guarantees of validity for their deployment. The complexities needed to be reduced to ensure consistency, stability and continuity – and at the same time openness to what was still to be investigated and uncovered. All of that could only be achieved through mechanisms of what in Luhmann's terms we call progressive systemic operational closure, with self-observation and self-regulations.

Closure of the system

Operational closure suggests a system that has reached the end of its embryonic development. From that point on the system can select the communications that are identified as having a legitimate place in it. This includes all of a system's validated exchanges between professionals, and also includes selecting out communication attempts not capable of using the acceptable semantics.

By establishing such closure, the system is already pursuing its autopoiesis – performing its self-reproduction with the means it creates itself. The system became capable of self-observing and thus distinguishing self and hetero observations, separating meanings belonging to the system or not, according to the recognizable semantics.

Concurrently, the sophisticated and complex language also becomes exclusivity of the system. From then on, no other system would be able to communicate using it. Medical terminology became fully intelligible only for members. In a single stroke, medicine became able to recognize itself (self-reference), and also able to make itself recognizable as external (hetero-reference) from the perspectives of the other function systems.

Illustrating the process, the anatomical-pathological findings did not impose themselves by their own arguments. Rather, they encountered fertile ground where scientific observation was becoming trusted and relevant. A medical profession looking for ways of affirming its identity and at the same time searching for substantive answers to countless questions derived from the problems encountered at patients' bedsides, welcomed the new world of reflections. Medicine understood the value of the new ways of communicating about diseases and treatments.

It can be said that at that time, in the eighteenth and nineteenth centuries, the possibility of descriptive communication about the diseases (by following the patient all the way through to autopsy) was recognized as having a value of its own, detached from the frequent and rather frustrating attempts to treat and cure.

Few treatments were available in the crowded Parisian hospitals, and they had little or no efficacy. Medicine was nevertheless being built on

the communication about the findings being made, rather than on the successes being achieved. If the health system had depended exclusively on successful treatments, then it would never have appeared.

The closure of the system made acceptable the internal communications about disappointment with treatments, because understanding failure was as important as understanding successes. While there was acceptance, tolerance or even encouragement of internal controversies within the protection of the system, it could also protect from external controversies that could bring destructive impacts from outside the system. In Luhmann's (2013) terms any incursion of the environment into a system has destructive effects on the system. The system therefore could not remain open (without closure) and had to ensure the exclusive internal validation of its communications.

The medical science was trying to precisely define its domain, but what it managed to set was the grounds where controversies were accepted and the self-reflection of medicine could take all polemics on board, as nobody else could in fact interfere. In short, the closure created a safe environment for medical self-reflection.

Closure and power: a few words

In line with the Social System Theory we understand the operational closure of medicine was not aiming at the effects of normalization for social domination, as perhaps a Foucauldian tradition would have it. In general, medicine's driving concern is with the marked side of the healthy/sick distinction: sickness. It is interested in the diseases: where they appear, how they progress, how they can be contained, cured or not – normality does not tell us how or why a disease will or has appeared. There is no normality in etiology; normality is what is left behind.

Many power relations in society had already existed for centuries, before the strengthened roles of physicians in relation to their patients. Doctor/patient was not a new power relation. The health system would not achieve its closure with the intent to provide society with a new

model of how to exert power inspired by the "domination" of the patient by their doctor.

The health system was too busy trying to ensure its effective closure and the sustained preservation of the flow and content of its internal communications; its selections of semantics were still being stabilized and secured. Worrying about the benefits other social systems would gain from adopting its alleged "power strategies" would be far removed from medicine's concerns.[2] The survival of the system was the chief concern. The confirmation and permanence of the new semantics was the absolute priority. Everything that could help that objective was welcome. Coupling with political, legal, economic, religious and other systems would be pursued with the intent of getting those assurances.

Power over patients was less of an existential necessity than the need to internally communicate using the common semantics being developed. What was done with patients was primarily justified in the eyes of the peers; the patients themselves would hardly be equipped to understand the communications. The distinctiveness of the medical language was not primarily intended to alienate patients or keep them unaware about what would be done with their bodies. The complexities of the medical justifications, as well as, for instance, the complexities of legal reasoning argued between judges and lawyers, are features of semantic expansion within the confines of systemic closure, in the process reinforcing and reproducing it.

With Social Systems Theory a particular conception of society appears. A society organized in function systems cannot be assumed to follow a single plan of power and domination. Each system strives to survive according to each one's drives; autopoiesis of each function system is pursued independently and if the coupling between systems is possible, and often happens by increasing the likelihood of individual systems' autopoiesis, the coupling does not follow a macro "narrative" intended

2 In a recommendable discussion of Foucault's views on use of medicine as strategic power, Mol (2002a) raises critical points. For example, she says: "And however influential it may be, (medical) science does not have the power to impose its order" (p. 61). Mol adopts Bruno Latour's perspectives in her reflections.

to foster a specific world view and social hegemony and dominance. Any individual system's priority is its survival. The system survives and associates with others; there is no macro script coordinating the arrangements between all systems aiming at achieving a selected end. This is a fundamental feature of Luhmann's (2014) grand theory, which often contrasts with other ways of seeing social order and social evolution.

Final remarks

The works of these two authors give us elements to corroborate our thesis that Social Health Systems emerged in the late eighteenth and early nineteenth centuries, with the initial convergence of clinical medicine and public health during the French Revolution, representing the first political exercise to serve a population, regulating a self-referential medical discipline while formally recognizing medicine's self-regulation prerogative; the self-reference of the health system was thus inaugurated. As Luhmann could have said, a self-referential system organizes the observation of its observations and the descriptions of its descriptions in the second order of ordination (Luhmann 2013) – that is, second-order observation being self-observation as observer of itself. Medicine thus had fully achieved the structures and functions to become the core of the health system.