Final Remarks – Science or Technology

In this last chapter of the book attention is on the use of theories in academic and business contexts. Let's take the distinction between science and technology, with the second understood as translation of the first, with the purpose of bringing about improvements of some sort. The distinction is clear for the separation of, for instance, manufacturers making new designs of cars without having to review or reconceptualize any of the scientific knowledge about metallurgy, electric and electronic circuits, mechanical engineering, aerodynamics, and so on. Making pieces, tools and objects that are advantageous regarding efficiency, aesthetics, ergonomics and other parameters of judgement, rarely requires new scientific theories or hypotheses. This is what technology is about.

By the same token, we can comfortably say that most of what has been published in the field of health system, health systems thinking or health systems strengthening can be classified as technology. In this case, the manufacturers are in the academy, providing new designs to go into the testing grounds of the health systems of the world. Very little science is actually produced; most works consist in redesigning what has already been established in scientific fields or are still tentative drafts.

Were each advance in the car manufacturing industry to be described and published in the literature, there would possibly be as many articles on the subject as are found in the health systems literature. But there is no interest in such publications, because at the end of the day the selling of the final product in the car market is all that matters.

On the health systems literature, on the other hand, the market for such final products is limited to a small set of sponsors in the international arena, in search of technical advice and willing to pay for health strengthening initiatives in countries supposedly in need of them. In fact, besides the technical

advice, the main products in this industry, the publications themselves, around which much of academic life revolves, are to a large extent what are at stake.

The industry of producing such technologies, health systems thinking for instance, is less concerned with making changes in the real world – like fancy new cars speeding along the highways of the world – but rather with generating publishable articles to reach high scores in the citation indexes of academic journals, or influential positions in the agenda-making of research and advising sponsors. If we abstract the nature of the products, we see that we are dealing with the same thing, namely technological innovations. The published health systems technology sustains both the related advice and academic careers in the respective industries.

It is easy to identify technological initiatives because they come as a result of fixing attention on a few features for improvement. What is relevant is to adequately justify the techniques of the interventions, and that new design with new potentially successful buzzwords is brought to the "market". In-depth scientific exploration is not required, as airplane designers would very well agree while considering different designs for the fitting of the interior of the cabins; all that they are concerned about are techniques for manufacture and testing to adjust the designs.

For technological initiatives, no deep discussion of the logic, validity and precision of concepts are needed. Simple, reasonably measurable definitions are enough. Resilience, community participation, empowerment and ownership are just a few of those terms that are used in academic health systems communications, giving an impression of fair understanding, nevertheless leaving crucial problems unaddressed.

For instance, what is the nature of power or empowerment? What are the limits and qualification basis of resilience? Is negative resilience, keeping bad habits in place, as relevant as the positive one? To what extent does participation inhibit or prevent participation? How and what is actually possible to own when ownership is intended? In these kinds of questions, not only techniques are matters of concerns; the very nature of the phenomenon, the concepts expressing them and the possibility of observing them are of central interest.

But, as interior designers of airplanes would reject as unnecessary any discussion about the theories of molecular structures of matter explaining why plastic of certain density is amenable to taking on shapes for the fitting panels, those aiming at publishing articles in academic journals would not get deeper into reflections about the meanings of resilience, power, participation, etc. They already know the technology "market" they are in, and it does not

require such exhaustive exercises. A successful term in this market is the one that produces echoes throughout a number of publications and does not quickly exhaust its attractive potential, no matter how superficial and fragile it still is.

We can here open a brief parenthesis and talk about the art social system, also a system to which Luhmann dedicated his attention.[1] Art techniques of painting, sculpting, playing music, etc. may generate products that are appreciated but are not recognized as art. The art system itself does not recognize them as art because they do not fulfil criteria of novelty, originality, singularity, surprise, innovation, breaking with established traditions, and other standards of judgement the art system creates for itself. Likewise, technological application and replication can be easily multiplied. But scientific advances require novelties and incursions into what is not already known, not just simple repetition of the techniques already established.

However, it must be said that in the medical science field, the enormous amount of technical publications that can also be considered technology nevertheless have specific relevance. The publication of collections of evidence from results of treatments, clinical trials, review of publications, etc. does not need to represent breakthroughs or new theoretical approaches in their specific field. Most publications simply report on the results of application of exams or therapeutic techniques, and do not propose or suggest any new theoretical view on the studied phenomenon. Nevertheless, the reported evidence helps other professionals to find possible solutions for treating patients with similar problems. This is undoubtedly of high relevance for the development of medical science and the theoretical work that can use those observations.

In the field of health systems, on the other hand, where the theoretical base is very fragile or even non-existent, the collection of lots of evidence does not contribute in the same way that medical techniques evidence does. This contrast is partially due to the fact that medical science has a solid theoretical/empirical basis (in areas such as pharmacology, physiology, biochemistry, pathology, radiology, surgery, and so on), while health systems are at the first stage of technical development, using all sorts of references from external fields (sociology, epidemiology, psychology, economics, management, political science, cybernetics, and so on), trying to find its identity.

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1   If interested, the reader can dive into Luhmann's (2000) book *Art as a Social System*, with a deep and thorough analysis of the evolution of the art system to its current stage as seen in contemporary artworks, museums and galleries.

In correspondence to that, all technological approaches to health systems are tentative; the maxim "one size does not fit all" is often reminded as the diversity of variables involved and the peculiarities of each context continue to multiply. The health system "boat" seems to be lost in a storm of unending new factors and variables, sailing through it with the "thinking" option, which does not seem to reveal the limiting horizons and coordinates to navigate a vast, endless sea.

The researchers may take a health system topic as a subject – for instance, reference and counter-reference from primary healthcare to secondary healthcare facilities – and then go to the field to observe and take measurements. Each new context of study will offer plenty of new variables to take into account for the judgements of what seems to work or doesn't. As opposed to the medical researchers with their sets of well-established theoretical references, the health system researchers will have to look for ad hoc references used by other empirical works or borrow some from other fields of knowledge; they will have to move on and be happy with that. Then, they will go out into the field, make observations, narrate what was observed and that is it; no theory is confirmed or discarded, or even mentioned. Often, there are no theories to talk about, and the work would not have the ambition to contribute to the development or refinement of theoretical knowledge; and yet very little is added as evidence for technical intervention designs, given the plethora of variables, diversity and specificity of any social context.

The publication may just say that in countries "X", "Y" and "Z", x %, y % and z % of PHC patients are referred to secondary level, and some factors explaining the differences are listed; no theoretical base is needed. This is obviously technology trying to figure out the best "fit", not science. In this, the researcher may be easy prey to ideological currents that may imperceptibly influence the selection of variables. Ideology is effective in occupying spaces left unattended in theoretical fields.

Yes, we do have to admit and give credit to the usefulness of narrative description of contextualized experience. Someone may get suggestions from those narratives, and be inspired by them for the work they may have to organize in another setting. The value of the testing of tools and collection of empirical data should not be disregarded. We are not advocating that it should be ignored. However, attention needs to be given to theoretical work per se.

The hard work of theoretical construction does not promise simple success. A polemic and difficult conceptual body may not attract much attention, particularly from those looking for quick fixes and piecemeal approaches that can

speedily be translated into a new generation of technological products, meaning publishable new articles, even if using half-baked concepts. It does not matter if reality artificially narrowed down at the site of observations is constructed by discarding crucial elements. The technology "market" is sovereign within its domain. The demand for technologies is not the same as the demand for scientific knowledge. The "market" for health systems technologies is well developed in the academic and development-aid industry worlds; on the other hand, the "market" for health systems theory has still to emerge.

For the Social Systems Theory, science is a functional system operating with communications based on true/false binary code in connection with theories and corresponding evidence search techniques. Technology is not a function system; it rather comprehends normalized, standardized communications inside any function system and, more specifically, communications concerning applications and whether they work or not. Luhmann (2007, p. 416) has an interesting formulation for the problem of technique: "the technique … operates orthogonally in relation to the operational closure of the autopoietic systems", thus assuring structural coupling between *function systems* and their environment. In other words, any function system can incorporate technical communications (and relevant technologies) for their specific matters of concern. In this sense, the science function system may incorporate techniques for its considerations in distinguishing true and false, but it is not concerned with the usefulness of techniques, which may or may not be absorbed by other function systems for their own sake.

To this discussion we may add a comment on the low relevance given to exclusively theoretical papers. With rare exceptions of specific journals, most academic journals require empirical data analysis, and reject papers without that. But they are not demanding on the theories employed, never mind the quality of the concepts deployed for fieldwork observations. Perhaps it is necessary to advocate for better theoretical scrutiny of concepts deployed in empirical studies, and the acceptance of strictly theoretical reflection on conceptual frameworks used without any consideration of consistency and adequacy.

Final comment

Addressing health systems as social systems requires a notion of system different from what has been used in health systems studies. This new way of speaking will certainly find resistance as the word "system" has been used for decades

without a precise definition. It will not be easy to convince users accustomed to the previous uses, of the value of a new semantic with the same sign (the word system). We may talk of "conceptual resilience" here. It is unlikely that the new concepts succeed in bringing about widespread acceptance and recognition, particularly when they sound complicated and counter-intuitive in relation to settled notions.

Yes, health systems have been talked and written about over the last decades in many international and academic forums. Many operations, investment and initiatives communicate and try to make health systems across the world into visible functioning organizations that can deliver what is expected of them, with collected knowledge and resources. The success of a call for better understanding of the working of those huge on-going apparatuses is not certain.

The term "health system" has opened a world of associations. Anyone engaged in any health system knows is communicating within a comprehensive whole called health system. The institutions, organizations, services and personnel are all part of this constructed conceptual whole, using the semantics that make the universe of communications of a health system. The self-reference does not need to recognize that it is what it is in any particular or rigorously defined sense; self-reference advances even with contingent forms.

So, the terms "health system as a social system" may become well understood and incorporated into the communications of the science system, but may take longer to become normal "currency" in the pragmatic, operations-orientated health systems. Furthermore, a new paradigm of observation is required; as opposed to the unilateral medical observation of the human body, the observation of social systems is observation of observers observing observers.