The organizational puzzle of the global health system: insights from the high reliability organization theory

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Abstract

This chapter aims at reflecting on some puzzling issues regarding the Global Health System that have been present throughout the collection of empirical evidence during the preparation of this book. From their specific angles, contributing authors in this volume have presented their point of view of the management of the Global Health System; they all point towards the complexity of managing such an open system. The first section of this chapter presents a characterization of the Global Health System and asks the question: under what conditions can the Global Health System actually be considered a system? Positioning the World Health Organization (WHO) within the Global Health System and analyzing its long-lasting quest for reforms will help raise issues related to governance. The second section of the chapter goes back to what appears to be one of the key features of the Global Health System, namely, the incomplete model for public health interventions during epidemics. This framework benefits from a general consensus among members of the Global Health System. However, this framework has been the subject of critique for [...]
9 The organizational puzzle of the Global Health System

Insights from high reliability organizations theory

Mathilde Bourrier

Introduction

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emergency responses to health crises which rely on local expertise of all kinds, including the expertise of victims.

**Characterizing the Global Health System**

*Can we even call it a system?*

A quick look at the online *Oxford Dictionary of Sociology* (Scott & Marshall, 2015) gives the following definition of a system:

> A system is any structured or patterned relationship between any number of elements, where this system forms a whole or unity. It is assumed that a system has an environment and thus there is the requirement of boundary maintenance. There is an interchange between a system and its environment. It is further assumed that systems will tend towards an equilibrium state or homeostasis.

With this definition in mind, we find it worthwhile to consider the following question: is global health a system after all?

Undoubtedly, there are interacting pieces and interdependent components. Actors are interacting with one another in complex networks and sub-networks, forming an intricate whole, or a true lattice. This system is surrounded and influenced by a myriad of social, political, institutional, economic, ecological and geographical elements, facing “existential challenges”, to borrow from Garrett (2013). It is definitely an “open system” (Scott, 1992). However, there is no easily readable structure, few common purposes, and some alignment of positions. On one hand, the “front-runner health target is Universal Health Coverage” (Garrett, 2013, 20), formally endorsed by the UN General Assembly in December 2012. This lofty goal requires a massive reorganization in order to tackle health management and health infrastructures’ financing. On the other hand, malaria, HIV/AIDS, tuberculosis and infectious diseases, which forged the historical backbone of international health and are still on the agenda, require investment and attention. No clear and definite set of rules governs its structure. There are few common processes, some shared health infrastructures (like the WHO collaborative centers), highly diverse target populations, and diverse methodologies to carry out public health interventions. However, those that are accepted are producing a strong normative order and professional doxa, derived essentially from biomedical knowledge.

If, even despite the limitations mentioned above, we choose to envision the Global Health System as a system, then the important questions pertain to Global Health System governance, including the forces driving decision-making processes. Holding this view lies possibly at the core of the permanent urge towards institutional reform, which seems to target
specifically the WHO. However, if confronted with the same elements above, we reach the conclusion that the Global Health System is not a system, then the question becomes less about its governance, but rather its capacity to self-organize and self-design in order to introduce resilient strategies to achieve “better” tailored public health interventions. The answer given to the system question and its institutional design thus plays a large role in framing the type of remedies that are regularly put on the table.

The following quote from Bill Gates expresses this fundamental ambiguity:

The problem isn’t so much that the system didn’t work well enough. The problem is that we hardly have a system at all … [Global Health needs to be] coordinated by a global institution that is given enough authority and funding to be effective.


As organizational theorists would suggest (Scott, 1992), if there is no system, centralized coordination is a long shot and has almost no chance to emerge. Furthermore, even if a system can be defined, decentralization might also be at play. Bureaucratic systems are hosts for both centralized coordination and pockets of decentralization that allow for soft adaptation of the rules (Crozier, 1963). Let us see if we can make further sense of the puzzle.

In search of “global health”

Both the A(H1N1) pandemic and 2014 Ebola epidemic revealed the complex landscape of global health actors in action. In the course of this research, we counted no less than 138 organizations or institutions. For Chabrol (2014),

The Global Health label generally designates the diversification of the actors (particularly, private actors), the competition between the WHO and the World Bank and philanthropic foundations, as well as the technologization of interventions and health policies that are oriented toward access to medication.

In this maze-like context, some actors in global health governance obviously held more weight in the field than others (Youde, 2012). With a historical distance and an analytical lens, this story can now be told (Packard, 2016). The WHO, based in Geneva, was and continues to be composed of six regional offices and representatives in 196 countries. The WHO is flanked by its World Health Assembly, hosted every May in Geneva, by an executive board, whose principal meeting is held every
January, and the institution’s secretariat (Lee, 2009; Kamradt-Scott, 2010, 2011). Based in Atlanta, the American agency, the Centers for Disease Control and Prevention (CDC), represents a veritable Mecca of global public health and has offices in sixty countries. The health ministers of Member States of the WHO are also in the picture. Along with large medical NGOs, such as Doctors without Borders or Doctors of the World, a myriad of mid-size and small NGOs add support by participating in care delivery and vaccination campaigns. Research labs, such as the network of large research institutes (like Pasteur or Koch), pharmaceutical companies which develop and devise medicinal treatments and vaccines are crucial members of the Global Health System. Large private consortiums and philanthropic foundations, like the Bill and Melinda Gates Foundation, the Clinton Foundation, the Global Fund to Fight AIDS, Tuberculosis and Malaria, GAVI (the Global Alliance for Vaccines and Immunization), based in Geneva, the Wellcome Trust, based in Great Britain, represent very important global health financiers. The World Bank is also a powerful player on this international chessboard. The various Red Cross organizations, all of which are regrouped under the International Federation of the Red Cross, based in Geneva, are also key players, especially when it comes to social mobilization. Hospitals, academic research in general, and public health research institutions or epidemiology training schools, such as the highly reputable internal training program offered by the CDC, Epidemic Intelligence Service (Thacker et al., 2001; Thacker et al., 2011) home of “Disease detectives”, are key in developing clinical management guidelines and sustained evidence-based research. The providers of automated tracking systems like the Canadian Global Public Health Intelligence Network (GPHIN) and powerful networks of experts, for example the Global Influenza Surveillance and Response System (GISRS), are also part of the Global Health System.

The inner functioning of some of these segments are better known than others. This is true for the CDCs (e.g. Ansell & Keller, 2014), for the WHO (e.g. Lee, 2009; Kamradt-Scott, 2011, 2016; Chorev, 2013; Brendler, 2014; Abeyesinghe, 2015), for Médecins Sans Frontières (MSF)/Doctors Without Borders (e.g. Fox, 1995; Redfield, 2013; Péchayre, 2014; Hofman & Au, 2017; Neuman & Weissman, 2016) and for the International Committee of the Red Cross (e.g. Forsythe, 2005), to name only a few. However, other crucial parts of the system and the roles they play in global health have been less investigated so far. This is the case for the so-called Big Four accounting and audit firms – Deloitte, PricewaterhouseCoopers (PwC), Ernst & Young and KPMG – that regularly figure when money is involved. This is also true of philanthropic foundations whose budgets are scrutinized (McCoy et al., 2009) but not so much of their inner functioning (with the notable exception of Levich, 2015).

These organizations find themselves at the interstices of a complex web where different logics tend to assert expert knowledge and evidence-based medical expertise in a landscape where they are often subjected to other
The organizational puzzle

factors, such as politics and diplomacy. For example, in the case of the WHO, there is some tension between operational expertise versus technical recommendations based on evidenced-based surveys. Our informants felt that their mandates were not set in stone and fluctuated depending on the situation, the context or the country affected. For example, during the 2004 Ebola virus disease technical officers at the WHO’s secretariat navigated between different postures that were somewhat in opposition. Were they expected to coordinate public health interventions in affected countries or were they responsible for establishing evidenced-based guidelines for specific areas? Depending on the person we talked to, different views on such matters were offered. This observation echoes Littoz-Monnet’s analysis (2017) of how international bureaucrats – “bureaucratic entrepreneurs”, as WHO technical officers and members of the secretariat appeared to us – expand their expertise and forge their agency. They often relied on external experts, some of them being former employees, who are regularly invited to numerous informal consultations to advance certain issues (like risk communication or mathematical modeling).

However, this potential “mission creep” (Littoz-Monnet, 2017), or tension between their professional nature (supposedly apolitical civil servants) and the political and legal requirements of emergency decision making, regularly exposes them to criticism. This has been true for the A(H1N1) pandemic and for the 2014 Ebola virus disease. As Law scholar Heath (2016, 3) suggests when reflecting on the emergency power of the WHO: “Attempts by emergency governors to manage this tension are frequently pathological or even catastrophic, producing decisions that are neither scientifically nor politically justifiable”.

At first glance, even just by briefly mentioning the actors to be considered, that their ability to coordinate common struggles is not self-evident is easily recognizable. There is not one global health but rather numerous global health agendas depending upon each player’s position on the chessboard, the “causes” that they claim to support as a priority and the resources they manage to secure. This setup reveals a system of interdependencies and interwoven alliances, some of which are bureaucratic in places and flexible in others. Both inter-knowledge and self-distancing are at the same time primordial (Vardin, 2015; Saluzzo, 2011), particularly across institutions that, at least in appearance, hold contrasting positions on the global health chessboard, as is the case with the WHO versus MSF or the WHO versus the CDC.

Lakoff presents two versions of what he calls the global health regime: the “global health security” regime and the opposing “humanitarian biomedicine” regime. Both versions are complementary and represent two faces of the same coin: “the two regimes might best be understood as complementary rather than inherently contradictory facets of contemporary global health governance” (Lakoff, 2010, 75). Most scholars describe a system where humanitarians, security and capitalistic logics are all interacting,
playing a bigger role than ever in the outcomes observed on the ground (Fassin & Pandolfi, 2010; Neuman & Weissman, 2016).

These actors, the most prominent of which were trained as medical doctors, benefit a priori from heightened reputational capital: not only virologists, epidemiologists, virus hunters and vaccinologists, but also humanitarian doctors, hold the upper hand (Wald, 2008; Lynteris, 2016). The Global Health System displays a profusion of strong networks of past experiences and socialization shared among some sets of experts, mainly through former medical training and former battles against deadly viruses (Saluzzo, 2011). These networks work across organizations and institutions. For many informants, there is no doubt that careers have been made thanks to past outbreaks. In addition, the Global Health System is intrinsically highly competitive vis-à-vis resources, scientific publications, legitimacy, expertise, visibility and institutional standing (Weisz et al., 2017).

Nevertheless, criticisms of the functioning of the Global Health System regularly bring to the forefront the following:

1. The turn towards reliance on funding sources per program at the end of the 1990s provoked the desertion of transversal funding opportunities for public health infrastructures (Navarro, 2004; Calain, 2007).
2. The collusion of interests between the bioterrorism agenda and the public health agenda has deepened, to the detriment of the latter, leading to what has been called the “securitization of public health”, under the global health security agenda (Calain, 2007; Abraham, 2011; Calain & Sa Da, 2015). This logic would come to favor a populations’ monitoring policies in this regard, operating purely to the benefit of rich countries, rather than developing accessible treatments for poorer ones (Horton, 2014).
3. The systematic recourse to vaccines.
4. The fact that the coordination of severe events, particularly the surveillance of infectious diseases, was done via non-coercive International Health Regulations (IHR). These remained the only real means of action available to the WHO (Fidler, 2003, 2004, 2005; Fidler & Gostin, 2006; Youde, 2012).
5. The global health security agenda provided the basis for heavier weight to be given to scientific, humanitarian, safety and capitalistic logics, which were already strongly intertwined (Roemer-Mahler & Elbe, 2016) and still all too often tainted by neocolonial intervention (King, 2002).

The regular surge of coordination arenas signals also that inter-organizational relationships are a constant challenge (Scoones & Forster, 2008). The creation of the health cluster, coordinated under the auspices of the WHO’s secretariat, is also a tribute to the necessity to coordinate big players in sanitation and humanitarian arenas. One of our informants mentioned also the role of the Global Health Security Initiative (GHSI)
Advisory Group, which in his mind failed to assume leadership in the 2004 Ebola crisis. Finally, the creation of UNMEER (United Nations Mission on Ebola Emergency Response) in this respect, in September 2014, although surprising at first, is in line with this constant uphill battle to coordinate heterogeneous actors, institutions, networks and countries (UNMEER, 2015).

Some organizational traits

The Global Health System is very fragmented; 138 organizations are listed in our project’s database. It is polycentric (WHO, CDCs, GAVI, Wellcome Trust, National Institute of Health, International Federation of the Red Cross, large NGOs like MSF, etc.) and newcomers are constantly joining (especially small NGOs and civil society groups). Borrowing Perrow’s concepts (1984) of tight coupling (no pauses, substitutions, diversions or slack) and loose coupling (substitutions are possible, slack exists), while describing high-risk systems – like nuclear power plants, weapons systems, air traffic management and many more vital infrastructures – we also envision the Global Health System as both tightly and loosely coupled. It is tightly coupled when one considers the singularity of many types of expertise, few formal coordination mechanisms through the IHR provisions, for example, or long-established programs (like that for the surveillance of influenza) and strong and exclusive ties with WHO collaborative centers. And it can be considered loosely coupled when informal networks, disparate sources of funding, temporary mechanisms, and ephemeral roadmaps or initiatives are taken into account. It is also at some level uncoordinated globally despite the WHO’s institutional role and its occasionally contested leadership in global health (Lee, 2009). For example, different accounts made by our informants during the 2014 Ebola epidemic revealed that it was difficult to find a legitimate arena, when hosting different organizations, to openly debate certain contentious points (e.g. Ebola treatment units versus home-base care or community care centers) that rapidly emerged during deployment operations on site.

These frictions can also be interpreted as the result of the impossible task of coordinating actors who resist coordination on the ground and at various levels. Large NGOs like MSF, most notably, cherish their independence and freedom to act on the ground. As a consequence, they tend to escape coordination mechanisms (Nunes, 2017). The same observations were made during the A(H1N1) pandemic where countries, through their ministries of health, expressed their sovereignty. However, some coordination for outbreak management exists. Formal networks of communication, based on the trading of different forms of technical expertise, embody the transboundary dimensions of the Global Health System, when responding to large outbreaks. The Global Outbreak Alert and Response Network (GOARN), created in 2000, represents one clear example of
these coordination mechanisms (Ansell et al., 2012). It links 120 different organizations, ranging from labs, scientific institutions and NGOs to public health institutions. The Emergency Communication Network (ECN), analyzed in this volume by Bastide (Chapter 5), during the Ebola crisis offers yet another example.

Finally, the Global Health System has a few generic instruments, which are deemed applicable to a wide spectrum of countries, regions and problems. While some of these instruments are not all-powerful, they are nonetheless often discussed. The preparedness concept is one of these instruments, and its social history is of importance to understand how epidemics and pandemics are framed by public health actors and their institutions (Zylberman, 2013; Caduff, 2014; Lakoff, 2017; Bastide, Chapter 2). The IHR and its provisions for core capacities and components (2005, implemented in 2007) are also a way to envision progress and give meaning to achievements among diverse countries (Katz & Dowell, 2015). The Pandemic Influenza Preparedness framework (PIP, established 2011), an agreement between WHO Members States, pharmaceutical companies and other interested parties, is also an institutional space where key actors debate viruses, knowledge, vaccines and benefits sharing. PIP and IHR seem to grow in influence, alongside other permanent structures dealing with disease, epidemics and intervention.

**Positioning the WHO within the Global Health System**

Regarding the WHO’s position, the intertwining nature of the numerous global health agendas (for example chronic illnesses, epidemics caused by emerging or re-emerging viruses, reinforcing health infrastructures, campaigns to eradicate certain diseases, maternal and child health), the struggle for financing between departments and programs within the WHO, the power of certain large philanthropic donators, like the Bill and Melinda Gates Foundation or the Clinton Foundation, the dependence on compromises between Member States, the mechanisms for the allocation of funds and resources, the savvy internal arbitrations between nations and regions of the world, the three-level structure of the organization (central, regional, national) render the WHO’s functioning complex and difficult to decrypt (Lee, 2009; Kamradt-Scott, 2010, 2011; Brender, 2014; Dupras, Chapter 6). In this context, which has come to be incessantly reviewed and scrutinized, the WHO had since the 1990s been summoned upon to go through institutional reforms (Taylor, 1992; Sridhar & Gostin, 2011; Hein & Kickbusch, 2010; Clift, 2014; Horton, 2015; Kickbusch & Reddy 2015). Reports have been piling up for more than twenty years. Consequently, the WHO is constantly under reform and regularly portrayed as being in a permanent state of crisis. The literature on the WHO’s twenty-year reform cycle is also abyssal. Many scholars and experts are fine connoisseurs of the WHO’s shortcomings (Yamey, 2002; Sridhar & Gostin,
The organizational puzzle

2011; Fidler, 2015, 2016; Sridhar et al., 2016; Cassels et al., 2017). Yet, in
the end, the UN institution has managed to stay in business, so to speak.
The A(H1N1) pandemic and 2014 Ebola epidemic provoked yet another
round of discussions concerning urgent reforms that needed to be put in
place without delay (Brender, 2014; Moon et al., 2015; Moon et al., 2017).
Both crises have once again sparked criticisms and a new reassessment of
the WHO’s position (Gostin & Friedman, 2014; Gostin, 2015; Heath,
2016). Such insistence on the WHO’s reforms may be interrogated as
such in the light of Nils Brunsson’s arguments about administrative
reforms (Brunsson, 1989a, 1989b) more generally.

First, organization theorist Brunsson sees administrative reforms as routi-
nes and argues that they are attempts to provide administrative solutions to
problems. He contends that reforms can be regarded as part of organiza-
tional stability rather than of organizational change. He observes that conven-
tional wisdom places reform under the banner of progress, and equivocates
stability with backwardness. However, reforms bring further reforms because
they benefit from problems: “Administrative reforms can be suggested as a
remedy for almost any kind of problem such as low profitability, growing
competition or bad leaders” (Brunsson, 1989b, 245). One important source
of administrative problems is the tension between the way an organization is
perceived by outsiders and the way it actually works. Coherence, consistency,
action and control are difficult to build and align in any organization.

Brunsson’s remarks are especially interesting when considering the
WHO’s position. One of his observations resonates in this context, particu-
larly when he mentions that an important source of institutional problems
lies in the tensions between the front organizations project for the public
versus their actual inner workings. Members of the WHO that we inter-
viewed during our study were caught in this disjunction. For example,
interrogations about the issue of money during the difficult period of the
summer and fall of 2014 are a marker of this kind of misalignment. According to Grépin’s calculations (2015), and despite the conventional
wisdom frequently heard throughout 2014, funding has never been an
issue in the response to crises, whereas budget consensus and allocations
of resources have been. Another example refers to the difficulty that some
of our informants experienced in relation to subject matter experts in
their domains, or senior experts expected to coordinate responders in the
field. Another observation in Brunsson’s work concerns the unsuccessful
diffusion of earlier experiences, expertise and experiments as a marker of
an organization being constantly under the urge to reform itself. He
rationalized that reforms are eased not by learning but by forgetfulness,6
by mechanisms that cause the organization to forget previous reforms, or
at least those with a similar content. We will return to this observation
when discussing the forgetfulness of anthropological and social science
knowledge as being a legitimate part of a comprehensive outbreak
response.
This section has helped explain why the Global Health System is not a system after all. Despite Bill Gates’ urge for more structure, more leadership at the WHO and more resources, there is some doubt that this strategy might actually be fruitful. The next section turns to a feature of the Global Health System on which there seems to be more consensus and which is supported by various components on the chessboard: types of public health intervention during epidemics.

The existence of an incomplete model of public health intervention during epidemics

Interestingly, if what makes the Global Health System a system might resemble the quest for the Holy Grail, what constitutes a public health intervention itself is subject to more consensus. However, upon closer scrutiny, we realized that designing public health interventions entails a great deal of controversy. These debates not only feature normative global health experts versus the targeted populations (and their “faulty perceptions” and “resistances”), as one would spontaneously suspect. They also cut through major organizations themselves, revealing different views in the field of outbreak responses. This should not come as a surprise, since we have seen just how fragmented and diverse actors in global health are. However, this points towards designing organizational principles capable of working in such a hybrid professional milieu.

Consensus on a model

A series of apparatuses exist that most public health officers will favor, choose, know of, have been taught, or are teaching themselves. Lakoff and Collier (2008) talk about an “emergency modality of intervention”. Leach and Hewlett (2010) describe a “universal rapid response”. These public health interventions can be understood as repertoires of action that travel through the world. Such repertoires are normative by design, and they seem to be difficult to revise once deployed, despite the fact that deep opposition and resistance to public health measures develop at each deployment. Emergency policy making is a highly sensitive subject in any society. This comment, by Forster in the aftermath of the A(H1N1) pandemic, still resonates in the context of the 2014 Ebola virus disease:

Universalistic, one-size-fits-all responses drawn from reductive science are therefore argued to be insufficient, and possibly misguided. Planning and response efforts must consider diverse local settings and concerns. Reductive technical framings emerging from tight, unreflexive actor networks may prevent other options from emerging, and limit response pathways.

(Forster, 2012, 1)
Here again, internationally-led teams: (1) deployed isolation, containment and quarantine strategies, based on the implementation of nursing barriers techniques; (2) provided intravenous fluids; (3) organized contact tracing and surveillance of individuals suspected of having been in contact with infected individuals to identify chains of contagion; (4) put in place a “risk communication component” and (5) organized safe and dignified burials.

Many different responders, no matter to which side of the global health regime they belong (Lakoff, 2017), will favor this kind of deployment. However, critics tend to view this type of intervention as a technocratic public health dogma, top-down by nature, insensitive to context, and based on weak democratic foundations (Leach & Hewlett, 2010; Forster, 2012; Heath, 2016). It is deemed to pose great risks of rejection by targeted populations. Its generic properties also mask the fact that disparities, adaptations and controversies are in fact the norm when deploying public health interventions (Keller et al., 2012).

Consensus but controversy

Controversies were massive during the A(H1N1) pandemic and uncovered the margins of interpretation that both responders and populations showed in making sense of this episode. Despite the fact that pandemic plans were deemed too rigid and irresistibly triggered several provisions mechanically, numerous reports documented that countries, institutions and public health officers developed ad hoc strategies and soft adaptations of rigid pandemic plans. Some countries implemented school closures (France, United States, Japan). Some applied quarantine and borders controls (Japan). Antivirals were seldom used, apart from in certain severe cases or in certain countries like Japan. Some countries banned imports from Mexico, while others ordered mass killings of pigs (Egypt). Vaccine campaigns generally proved to be a fiasco almost everywhere (except in the United States or in Sweden) and shed light on possible mistrust of public institutions by large portions of the population, especially in Europe (Barrelet et al., 2013).

Fighting the Ebola outbreak also moved various actors to resort to a supposedly agreed-upon deployment doctrine, shared across organizations, members of the Global Health System and first-line responders. However, debates rapidly emerged, not only in public (between the WHO and MSF for example), but also within organizations themselves, for example within the WHO (see Cheng & Satter’s inquiry, Associated Press, March 20, 2015 quoted in Lakoff, 2017, 152) and within MSF (see Nierlé, 2014). They also pertained to the applicability of emergency public health measures by non-state actors (Hofman & Au, 2017; Calain & Poncin, Chapter 11). The option of the Ebola Treatment Center progressively came to be seen as a strong choice, made early by MSF teams with no
turning back. We noticed earlier (Bourrier, Chapter 3) that other available options like community care centers or home-based care were not given much consideration at first, although these alternative models were formally documented, both at the WHO and MSF. We mentioned earlier as well that recommendations regarding personal protective equipment (PPE) also triggered difficulties within MSF and within the WHO, and became also a veritable *casus belli* between these two major actors. However, no real institutional space existed to discuss other possible courses of action, in light of mounting difficulties in the field. At a later stage, pushed by some experts in various organizations who were convinced that community care centers were a valid option, such centers were deployed in Sierra Leone (UNICEF, 2015, 2016).

In this rather chaotic context, anthropologists organized themselves early through platforms (Abramowitz, 2017) to convey their decades-old message (Hewlett & Hewlett, 2008): quarantine, isolation, containment, the encircling of entire villages and manhunts inevitably provoke resistance, tensions and hostility towards Ebola responders. They organized themselves and rapidly published their observations (Fairhead, 2016; Wilkinson & Leach, 2015; Moulin, 2015; Faye, 2015; Lachenal, 2014; Le Marcis, 2015; Fribault, 2015; Laîné, 2016). They rehashed once more that mitigation strategies had to be worked on with populations and their leaders. This was of utmost importance, especially because people have prior experiences with contagious diseases and have developed precautions that can be built upon, even in the case of a novel virus (Hewlett & Hewlett, 2008; Richards, 2016).

**Anthropologists’ and social scientists’ unheeded recommendations**

Interestingly, as we mentioned earlier (Bourrier, Chapter 3), international guidelines on how best to intervene in communities when loved ones need to be taken away and/or safely buried existed (Boumandouki et al., 2005). They had been established both by anthropologists and WHO experts, locally and internationally, ten to fifteen years earlier. Anthropologists Hewlett and Hewlett noted in 2008:

> The WHO took our recommendations seriously and began to include medical anthropologists in early and multiple components of outbreak control. As a result, the WHO invited us to participate in the very early stages of an Ebola outbreak in Congo in 2003.

*(Hewlett & Hewlett, 2008, 61–62)*

The same is true of Leach and colleagues who made the same observation and explained that during an interview they conducted with the Director of Outbreak Alert and Response Operations (WHO) in Geneva in 2008, he claimed that the anthropological integration had recently become a
The organizational puzzle

key pillar in response strategy – as important as isolation (Leach et al., 2010). What then happened to this “anthropological piece”, as our informants in CDC called it, when 2014 Ebola struck?

By and large, these early attempts seem to have been diluted. The practical and ethical conditions under which public health interventions were possible in an Ebola context had already been reviewed (Calain et al., 2009). They needed an update, but the basic message could remain (Calain & Poncin, Chapter 11). Similarly, what anthropologists had written on hemorrhagic fevers some years ago was still valid and useful (Leach & Hewlett, 2010). However, our study shows that it had been somehow put aside and hardly transmitted at all. Why did this important piece of knowledge get lost in the past few years?

First, anthropologists and social scientists in general are not represented in the traditional ranks of outbreak response units. At the onset of the 2014 Ebola virus outbreak, WHO technical experts were openly sharing the fact that they had no solid expertise in social sciences. They felt uneasy about risk communication guidelines, for example. Second, social scientists have a simple message, urging emergency responders to deploy a comprehensive response, sensitive to context and in constant dialogue with affected persons. However, this could also certainly be interpreted as a radical critique of the off-ground intervention model proposed per se. Social scientists’ publications constitute a critical reservoir, representing a constant thorn in the side, ready to question principles under which decisions are made, especially on behalf of vulnerable others. This might explain why their message, which was controversial by nature, failed to come across more strongly. However, anthropologists came to the rescue again (Abramowitz, 2017) and their essential knowledge has constantly been mentioned since then during high-level talks.

The neglecting of anthropologically informed recommendations in the case of the 2014 Ebola virus outbreak serves as an excellent case study for the challenges faced by the Global Health System to connect different bodies of knowledge, coming from various epistemic communities, each of which are developing at different paces. Designing a consensus on how to operate locally, based on rationales embodied by so many diverse and heterogeneous groups and organizations is probably beyond reach. And it should be recognized as such. This should not be seen as a defeatist attitude but as a more realistic position, from which some elements can be discussed on surer ground and decided upon.

In this section, we have seen that controversies are everywhere. Managing outbreak responses is about managing debates, not only with diverse publics, but internally within networks, professions, organizations and regions. Hence, invoking better risk communication tools will not be sufficient. Rather, designing “heedful interrelations” and nurturing the development of “mindfulness” (Weick & Roberts, 1993) seems to be key in strengthening better-tailored outbreak responses. David Nabarro, still
frustrated by the difficulties encountered during the 2014 Ebola response, delivered a speech in front of global health experts in December 2015 in which he acknowledged this statement of fact.

Vignette

David Nabarro, representative for the Secretary-General of the United Nations, and unsuccessful candidate to become the WHO’s Director General in the spring of 2017, made the following observations on December 2, 2015 in front of a large number of global health experts.

More presidents, prime ministers are thinking of global health now than ever; more journalists are writing on global health than ever; there are more interests on health risks than ever; there are more actors involved than ever. Our narratives need to be acceptable to multiple actors. It is not satisfactory to say, we are the experts in every aspect; society is strong and resilient. The circus is normal life; whole of society in the norm, leadership in the circus with multiple actors is difficult; to gain in early detection, we need to listen to multiple actors; everybody has to be involved; risk assessment won’t be based on public health professionals; humans are embroiled with nature; we need to be working with nature and animals; communication is two ways with trust and respect; you can’t buy trust; our problem is not so much that we need more data, but rather what is done with data: ethical use; sharing; accessibility; we need to move from “health systems” to “systems for health” and much better, “systems for life, ability for function”; we need to create space, with trust and respect; others have a place and a role, and we need to create safe spaces; we need to engage in re-learning and be multi-disciplinary; we are hampered by our professions, sectoral orientation; we need to be agents of transformation, regenerative; impartiality and transparency, human rights are our principals. We are also communities, we are also games and power struggles; we need to look at our language. When we say “We are going to”, who is “we”. We need to be good at using power. We are all Humanitarians, we need to be careful at the way we use our institution, our uniforms; and let’s stop using these terms “contact”, “cases”, and “irrationality”, when this is about family members, friends, beloved ones.

(Anticipating Emerging Infectious Disease Epidemics consultation in Geneva, Dec. 2, 2015)

This speech, reproduced in a leaflet to remember the event, triggered nourishing applause in the large room. Appearing at the end of the day, as a guest star, David Nabarro delivered a message that seemed to curtail tensions and bad feelings. In the room, many experts could easily relate to this proposed vision, and dream at least for a couple of moments that this agenda of reconciliation could be implemented once leaving the premises.
Testing the Global Health System against theories and practices of high reliability organizations (HRO)

Puzzled by the organizational complexities and challenges at stake, which inevitably impact vital operations on the ground, and aware of their recurrence throughout the history of outbreaks, we felt the need to decenter the focus. This decentralization of focus is particularly of interest, largely due to what was spelled out in the first sections of this chapter. In this section, we look for possible alternative theories and practices that might be helpful. Notably, references from high-hazard organizations models might offer new angles to complex questions that the Global Health System and its various organizations and networks encounter. In particular, problems of institutional design will be addressed.

Meeting high-reliability-seeking organizations

The central importance of high-hazard organizations (for example nuclear power plants, chemical plants, airlines, railways, air traffic control systems and critical infrastructures) operating in modern society has triggered, and continues to prompt, much scrutiny. The importance of this has also sustained a large body of research in management, sociology, political science, anthropology, public administration and psychology (Le Coze, 2016). The operations, products and services of these often fragmented networks of organizations are deemed to be both essential and risky. To cut a long story short (Bourrier, 2011), much of this literature on reliability-seeking organizations, appearing on the scene in the 1990s (LaPorte & Consolini, 1991; Roberts, 1988, 1993; Rochlin, 1996; Weick & Sutcliffe, 2005), is concerned with the following set of questions, which might recast the current deadlock that one suspects in managing global epidemics (Lakoff, 2017): How and why, under challenging conditions, do some organizations do better and learn better than others? What could account for their differences and variance? What lies at the core of recurrent reliable performance? These types of organizations face a series of common challenges. High reliability theorists argue that organizations that can be described as highly reliable or as aspiring to highly reliable performance, and as showing a high degree of preoccupation with the four following problems: (1) balancing between an appropriate level of prescription and at the same time allowing for an essential autonomy in dealing with surprises in the field; (2) balancing between anticipating as much as possible while at the same time supporting adaptations when necessary; (3) coping with uncertainties and constantly seeking new perspectives on problems that organizations face; and (4) designing cooperation mechanisms to sustain frank collaboration in a highly fragmented system. As Karl Weick eloquently puts it:
HROs are important because they provide a window on a distinctive set of processes that foster effectiveness under trying conditions … Organizing for high reliability in the more effective HROs, is characterized by a preoccupation with failure, reluctance to simplify interpretations, sensitivity to operations, commitment to resilience, and underspecified structuring.

(Weick et al., 1999, 81)

Complementary to these principles, Erik Hollnagel, leader of the resilient engineering school of thought, argues that resilience is: “The intrinsic ability of a system to adjust its functioning prior to, during, or following changes and disturbances, so that it can sustain required operations under both expected and unexpected conditions” (Hollnagel, 2012, 199).

It is our observation that the management of epidemics within the Global Health System is also concerned with the four concrete tensions mentioned above. This preoccupation with organizing meaningful resilience meets recent legal considerations about institutional design. Heath (2016, 4) articulates three principles, which in his view should guide a renewed perspective on designing global emergency power, especially the power exercised by the WHO in response to health emergencies: (1) “managed decentralization”, (2) “epistemic openness”, and (3) “forced dissent”. In the final discussion, we will return to these propositions in the light of what we learned from the management of epidemics.

**Prescription versus autonomy**

Working with rules and procedures and expanding bodies of regulations is a given in most contemporary organizations (Graeber, 2015), and even more so within high-risk organizations. However, what are the implications for daily operations of having to document each and every stage of any process? At a certain level, one could consider that one of the key cultural features of these organizations, where safety is paramount, is an ever-increasing reliance on procedures that seems endless and unavoidable (Bieder & Bourrier, 2013). However, social scientists have long demonstrated that detailed prescriptions, although promoted everywhere, are not sufficient to obtain safe operations (Bourrier, 1999). Experts are operating with far greater levels of informalities and ambiguity (Wynne, 1988). Procedures are important (Gawande, 2010), but they are imperfect and sometimes counterproductive: orderly procedures to reduce errors are not foolproof barriers. Sometimes errors travel a long way and a long time in a very orderly system (Vaughan, 1997; Hofmann & Frese, 2011). As a consequence, the following crucial questions are constantly on the table: Which groups are in charge of creating and updating rules and procedures, and how is this done? How is the classic tension between prescription and autonomy organized and thought about in organizations expected to
produce and deliver an outstanding level of safe performance? Furthermore, how is the coherence of diverse sets of rules both simultaneously maintained and critically questioned?

To these crucial questions, there is not one single answer. High reliability theorists argue (Roberts, 1993) that one way to mitigate this tension is always to defer to the expertise closest to the problem. Proponents of this theory argue that expertise does not necessarily derive from technical knowledge. Rather, it is something that one gains from experience with the problem at hand. This has been referred to as “migrating decision making”, meaning that the expert closest to the problem is in charge of the decision. However, at the same time, the top takes responsibility for the decision, no matter what the consequences are. Along with a preoccupation with failure and a sensitivity to operations, deference to expertise ensures that the people who are directly concerned by a situation always offer their opinion and, more importantly, their solutions. Experts closest to the problems are the ones making the calls and should get all the support they need. Prescriptions designed by people directly concerned with the issues at stake are better suited to their needs.

What many observers and what our informants frequently recalled is that, too often, staff in the field were required to feed the upper level with data and information, which diverted too much of their energy and time. This was true for both pandemic flu A(H1N1) and for the 2014 Ebola epidemic. In the latter case, logistics were often talked about by our informants as being lacking or insufficient. Yet, at the same time they had to report and to log into complex IT systems in order to upload information about the response. Discrepancies were often noted between the level of sophistication of some of these interfaces deployed on the ground, and the absolute poverty of means that first-line responders experienced. This observation is not valid for MSF, which notoriously puts great emphasis on diligently supporting its staff on the ground. This is made possible also by the relative strategy of isolation that MSF Ebola treatment units put in place. As some of our informants explained, they did not want to coordinate with anybody and wanted to maintain their independence.

Anticipation versus adaptation

The second feature leads us to the cultural core of high-risk organizations, which could be summarized as a culture of anticipation that operates through planning and scheduling. Sociologist Richard Sennett (1998) once brilliantly explained why developing routine patterns was important in the workplace. He argued that employees cannot be expected to constantly respond to surprises. A minimum secure bedrock of rehearsed routines is necessary to work relatively peacefully. Furthermore, it is all the more important in hostile work environments, where risks are present and should be reduced to a minimum through careful preparation. However,
how to best plan, schedule, and anticipate crucial activities, while at the same time staying alert to avoid the tragic complacency that such activities inevitably produce, is always an uphill battle. Indeed, this very culture of preparedness is also an identified obstacle to learning how to face the unexpected (Weick & Sutcliffe, 2005). The false promise of scenario planning has already been documented (Clarke, 1999) and has been constantly revisited in the light of special events and catastrophes. The A(H1N1) pandemic told a story of excessive and inadequate planning, which left work teams overloaded. The Fukushima-Daïchi nuclear accident told a story of unthinkable and undone planning, which moved work teams to decide for themselves, under very stressful conditions7 (Guarnieri et al., 2015; Kadota, 2014). Ebola told the story of faulty and contextually insensitive planning. Preparing, scheduling and planning are an important component of any organization dealing with complex operational conditions. However, these tasks should not be understood as distinct phases (Keller et al., 2012), but rather as completely integral to the job and subject to adaptations. To decide upon these adaptations, high reliability theorists suggest resisting the tendency to simplify. Enriching the picture with different views, opinions, crafts and expertise, from various positions especially in a fragmented system, is of paramount importance. These theorists suggest that this multifaceted echo chamber should intentionally be designed as such and not obtained by mere chance (Rochlin, 1993; Bourrier, 2005).

How to best share ad hoc and successful adaptive strategies in order to diffuse knowledge on what works, and not only on what does not work, is an issue concerning and discussed among high reliability theorists and resilient engineering scholars (Hollnagel et al., 2006). They argue that too often management tends to focus on problems, masking improbable, yet successful, recoveries. In this line of argument, the 2014 Ebola epidemic provides another example of local mitigation strategies that have been overlooked and under supported. Emergent local knowledge, “a vibrant People’s Science” in Richards’ words (2016), undoubtedly helped to contain the epidemic. However, its undetermined paths of improvisation and bricolage have not been systematically recorded, leaving the question of organizational learning from crisis open once again (Keller, Chapter 1). Weick (1987) long argued that storytelling inside high-risk organizations was crucial to allow for the circulation and sharing not only of problematic events and how they unfolded, but also of inventive and resourceful options to solve tricky problems.

This commitment to resilience is often quoted as an HRO principle. The capacity to reorder, to move rapidly from normal operations to emergency conditions and in doing so to adopt a decentralized and team-based approach to problem-solving is one of the key characteristics of resilient organizations (La Porte & Consolini, 1991; Boin & Van Eeten, 2013). It obviously echoes the situation that outbreak responses encounter frequently, as we will further develop.
Coping with uncertainties

A third question that high reliability theorists have discussed at length is the following: How do actors best cope with uncertainties and risks inherent to the industrial process within a changing institutional environment while still maintaining products and services at a socially and economically reasonable cost? If risks might be recognized and taken into account, uncertainties might still remain. Hence, cultivating vigilance for unforeseen combinations of events remains a task in itself. This can only be done by challenging frameworks, norms and conventional wisdoms, which have been taken for granted, in order to question their intrinsic limitations and biases.

Some organizations have purposively designed institutional mechanisms to encourage criticism from within. The US CDC use “Team B” groups of experts and scientists to offer a new perspective on unfolding events and provide possible critiques of the core response’s options. “Team B” was used for the A(H1N1) pandemic, but less so for the 2014 Ebola epidemic. High reliability theorists argue that a balance has to be established between relying too much on very compliant people, with no inclination to challenge their working environment, and encouraging hotheads, who are always ready to break rules and procedures to set their own norms of performance. HROs do not look for heroes but, rather, for questioning minds. Hence, striking a balance between compliance and improvisation is probably one of the most difficult issues in management.

One approach is to accommodate and constantly seek new perspectives on complex issues. The idea here is to organize multi-level perspectives to enrich the vision on emerging, tricky and unclear problems. The requisite variety principle has often been discussed in this context. Political scientist Paul Schulman defines the requisite variety as a conceptual slack: “a divergence in analytical perspectives among members of an organization over theories, models, or causal assumptions pertaining to its technology or production processes” (Schulman, 1993, 364). In other words, in order to deal properly with the diversity of problems the world throws at you, you need to have a repertoire of responses which is as nuanced as the problems you face. Cultivating this mix of persons with their views, idiosyncrasies and expertise is problematic in itself. In the context of this book, it could be used as a reminder to battle against the forgetfulness of disquieting or misaligned facts.

Organizing cooperation in a highly fragmented system

High-risk organizations are often the theater of complex coordination mechanisms involving highly diverse work teams, with ultra-specific expertise, hardly transferable or co-shared. In these challenging human relations contexts, how best to enable coordination among various professions,
crafts, trades and companies is key. Co-working with many subcontractors and partners while avoiding the formation of clans, baronies and loss of information along the way remains a daily challenge. How best to depend on highly skilled personnel, where almost no substitution is possible among them (hence no rotating option), while not being trapped in their world views, entrenched wars and sometimes corporatist interests is a constant worry. Organization theory and sociology of organizations have long demonstrated that power relations play a huge role in the final result being delivered. As a limiting factor of power plays, scholars of crisis management and transboundary crises have already pointed out: “In fact, the research on crisis coordination suggests that ‘less is more’: self-organization tends to work better than imposed cooperation schemes” (Ansell et al., 2010, 199).

As Roberts and Rousseau (1998, 132) explain, taking the example of an aircraft-carrier, these work environments display a “hyper-complexity [due to] an extreme variety of components, systems, and levels and tight coupling [due to] reciprocal interdependence across many units and levels”. Anyone interested in organizational design is challenged by this feature: the degree of specialization and expertise among the different units, departments, crafts and subcontractors inevitably triggers a difficulty in adequately communicating each other’s concerns and needs. Work is done in silos (Perin, 2005), “structural secrecy” prevails and knowledge does not travel easily throughout the system of organizations (Vaughan, 1997). Pockets of crucial knowledge, both implicit and explicit (Broadbent et al., 1986), can stay hidden for a long time and do not travel through the hierarchical ladder easily, nor through the crucial network nodes. Vaughan has eloquently demonstrated how the culture at NASA, relying so much on hard data, supported by mathematical modeling, had not allowed other types of evidence, deemed soft or in the form of gut feelings, to be shared and acted upon. It allowed pending issues, deemed illegitimate, and hence unresolved, to strongly contribute to both the Challenger and Columbia accidents. High reliability theorists claim that paying attention to the circulation of stories about operational events and building plausible narratives explaining how they happened is a rewarding path to overcome the hurdles of “structural secrecy” (Weick, 1987).

Therefore, constantly battling against clans, entrenchment and stagnant pieces of knowledge is vital for achieving safe and reliable performances. A constant effort has to be made to navigate between experts. The same is true when dealing with widespread practices of subcontracting and delegation. Outsourcing requires a lot of reorganization at the principal level. Organizing a degree of leadership and “followship” is a task in itself. The degree and extent of distributed cognition is a constant challenge that needs to be monitored. Roberts and Rousseau (1998) once coined the expression “having the bubble” to best describe this extraordinary capability to collectively co-adjust courses of action and decisions. Weick
calls it “sensemaking activities”. By that, he means that organizational
failure and catastrophic events are best understood as the collapse of a col-
lective sensemaking (Weick, 1993). “Mindfulness” and “heedful interrela-
tions” are key properties to maintain collective dedication to safe
performances (Weick et al., 1999). The quality of organizational attention
to organizing processes is central to this discussion.

Conclusion: the place of high reliability organizations
(HRO) theory in global health frameworks

The larger question remains: How can these insights and principles from
other types of organizations be meaningfully translated into the context of
the Global Health System that was described in the first part of this
chapter? It appears to us that designing cooperation mechanisms in such
a fragmented, hyper-competitive, both tightly and loosely coupled Global
Health System is daunting. Yet, we can point to several examples of dedi-
cated organizational designs aimed at addressing these challenges. First,
CDC in Atlanta runs structures like the Emergency Operations Center and
uses Incident Management System (IMS) theory to enable strong commit-
ment and resource rallying from various parts of the organization in order
to strengthen outbreak responses. It allows experts to work across depart-
mental boundaries and diminish possible turf battles and bureaucratic red
tape (Ansell & Keller, 2014). The IMS concept was applied in Liberia (as
well as in other countries, like Nigeria, or Sierra Leone) during the Ebola
epidemic (Pillai et al., 2014, 931). As Pillai and colleagues explain:

A clearly defined chain of command and organizational structure,
effective resource management, and advanced planning are important
aspects of an emergency response. An IMS is a standard structure
based on these principles that is used in large and small-scale inci-
dents throughout the United States at the federal, state, and local
level. CDC has adapted IMS principles in managing their responses to
public health emergencies, which in addition to the command, opera-
tions, logistics, planning, and finance/administrative functions, also
includes scientific/public health response roles.

Second, during the 2014 Ebola epidemic, the WHO also reorganized and
experimented with diverse organizational structures to help with manage-
ment of the response. First, they used the Emergency Response Frame-
work plan at the organization level, then moved towards a regional option
with the SEOCC (Sub-Regional Ebola Operations and Coordination
Centre), and then finally assembled an Ebola response team at head-
quarters, along the lines of matrix management principles. As Dupras
(Chapter 6) explains in her chapter, it was not the first time that the WHO
resorted to matrix management per se. However, it is probably the first
time that it used it at such a scale. Enriching the picture and trying to get everyone’s expertise on the same platform were probably the intentions. However, some of our informants described the difficulty they faced when trying to be heard and respected in whatever they had to offer.

A third example of this necessity to coordinate different perspectives might also be found in the relative failure to bring anthropologists on board in the late 1990s and early 2000s. Even marginally, they were in a position to offer a different view on outbreak management. One would think that this is probably what is expected now from the “Social Science outbreak teams”, which have recently been installed at WHO headquarters within the Health Emergencies Programme (Johnson & Vindrola-Padros, 2017).

Moreover, following HRO principles, it will appear altogether problematic to coordinate an outbreak response from far away. The failure of coordination that so many people reported to us and in numerous accounts points towards a failure of a certain type: one that is based on the principle that the response can be organized from the top (WHO headquarters, CDC EOC in Atlanta; MSF’s operational center in Belgium) and deployed on the ground, with even a duplication of structures, mirroring the one at the top (Pillai et al., 2014). Managing outbreak responses from centrally located institutions runs the risk of favoring standardized approaches, narrowing down options and impoverishing local contexts. Major controversies in both the A(H1N1) pandemic and the 2014 Ebola epidemic erupted from a neglect of contextual realities. Many accounts report that centrally managing epidemics has never been possible and will not be in the future, as they are eternally unprepared (Richards, 2016; Lakoff, 2017). As Lakoff reflects:

[I]n the case of the 2014 Ebola epidemic, it was not clear which governmental agency or body of authorities held jurisdiction over the management of epidemic response at a global scale. Who exactly comprised or spoke for “the global community”? (Lakoff, 2017, 156)

Finally, is the WHO’s eternal reform mode the only way to go forward? Or rather, are these perpetual reforms a symptom of something else? What kind of problems are these reform attempts trying to solve? Is it the governance that needs to be fixed, or the kind of intervention that needs to be agreed upon? Following the path that high reliability theorists suggest, we argue the following: the type of intervention needs to be the core of the coordination; the rest cannot be centrally coordinated anyway. Therefore, the decision to combine Outbreak and Emergency Response programs into a single new “WHO Health Emergencies Programme”, allowing for a trickle-down replication at the regional and country levels, might be diversely received. On the one hand, it clarifies roles and
responsibilities and especially helps the headquarters level to officially
gain precedence over lower levels. It also articulates a stronger command
and control structure and responds to the vocal “failure in leadership”
criticisms. On the other hand, it seems to ignore some HRO theoretical
paths, encouraging organizations facing deep uncertainties to underspec-
ify structure, leaving teams, units and departments to reorganize with
maximum flexibility to avoid rigidity, and neglect local adaptations, which
are key in epidemic management. Standardization does not help human
actors in states of abnormal operation; instead, they need strong, flexible
guidance.

What remains to be seen is how to inject doses of interest for resili-
ing into the Global Health System, which has constantly been under
attack, with criticisms pointing to a lack of leadership and questioning
whether or not there are clear lines of command and control. Law
scholar Heath urges the consideration of three principles (“managed
decentralization”, “epistemic openness” and “forced dissent”) as being
key for seriously reforming global emergency power. “Managed decen-
tralization” echoes HRO’s “migrating decision making”. Management
decentralization comprises two components: “(i) a preference, articu-
lated in law or policy, for national leadership assisted by informal trans-
national cooperation and (ii) a focal point for debate and decision over
whether to escalate to an international response” (Heath, 2016, 38). The
second principle, “epistemic openness”, echoes the preoccupation of
HRO theorists with “system variety” and reaching out for more expertise
and constituencies to be included in the process. “Such a procedure
could be destabilizing in a way that shakes old habits and breaks through
accepted patterns that have proved unhelpful” (Heath, 2016, 43).
Finally, the principle of “forced dissent” could be paralleled with the
notion of “heedful interrelations” and the encouragement of dissenting
voices to prevent complacency.

The “resilient message” comes across as being at odds with the constant
urge towards more structure and leadership in attempts at strengthening
outbreak responses. Indeed, resiliency scholars have long argued that dis-
tributed knowledge and local expertise are crucial to capture efficiently.
Hence, designing for resilience and robustness is a totally new adventure
for the Global Health System. It entails starting from, learning from and
relying upon the existent and not only longing for more resources, more
structure, more control and more reforms.

Notes
1 These six regional offices are in: Africa, based in Brazzaville; the Eastern Medi-
terranean, based in Cairo; Europe, based in Copenhagen; South-East Asia, based
in New Delhi; the Americas, based in Washington, DC; and the Western Pacific,
based in Manila.
The role of university hospitals is not presented here, although they do play a notable role in the world of global health and the fight against epidemics (cf. Parfaite, Chapter 10, on the case study of the care provided to an Ebola-infected Cuban doctor evacuated from Liberia in the autumn of 2014). This does not exhaust the subject, particularly because university hospitals in Geneva, like elsewhere in Europe and in the United States, quickly took part in developing protocols for vaccine trials in the case of the Ebola virus, and they also revised care protocols for the pandemic flu, just as they did for Ebola (cf. Roemer-Mahler & Elbe, 2016; Evans et al., 2016).

The Global Health Security Initiative (GHSI) was launched in November 2001 by Canada, the European Commission, France, Germany, Italy, Japan, Mexico, the United Kingdom and the United States. The WHO acts as a technical advisor to the GHSI.

Perrow borrowing himself from Weick’s theory of tight and loose coupling inside organizations (Weick, 1976).

For instance, the article titled “Will Ebola change the game? Ten essential reforms before the next pandemic”, written by Moon and colleagues (2015), reflects the wording that one frequently encounters when reading material on reform of the WHO.

A similar argument is made by Mahler & Casamayou (2009).

The situation encountered by Fukushima-Daiichi operators and their first-line management should not be forgotten. Sometimes nothing holds, and capabilities to improvise have to be mobilized by terrified actors left in the dark, resorting to their own meager devices (Guarnieri et al., 2015; Kadota, 2014).

This odd expression has been used by David Nabarro, who served in 2015 as the UN Secretary-General’s Special Envoy on Ebola. He was referring to the necessity that all actors, including NGOs, accept being coordinated on the ground to enhance international response.

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The organizational puzzle


