Cover Story

Pandemic Prevention Strategies
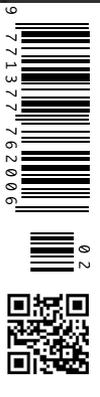
Prevention and Innovation for the Post-Pandemic New Normal

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Prevention and Innovation appear to be basic concepts for building a post-COVID-19 "new" normal, but which personal paradigms, and which collective actions would make them a reality beyond words?

Key Points

- Prevention: the system of measures to assure protection in case of predictable events with negative impact on people and environment.

- Innovation: methodology to activating first of all the detection of unmet needs and the consequent stimulus of realising products or services satisfying them.

- Pandemic: an infectious disease widespread over a whole country or the world.

- Healthcare infrastructures: the complex system of healthcare assets, including hospitals.

- Systems Analysis: a method to study complex technical, social, etc. problems breaking them down into basic elements, of which the important part is then to evaluate their interrelations. Introduction of changes and study of the effects make SA an important programming and planning tool for complex realities.

- Urban way of living and quality of urban life: determined and affected by situations and conditions internal and external to the area. Urban planning deals with physical layout of human settlements, that is, it concerns the development and design of land use and the built environment, having the goal to improve the quality of life of the planned area.

Introduction

It is a difficult exercise, certainly not only for me, but for anyone who wants to take the road of putting together a cogent reflection about the world after the pandemic that, like an immense tornado, has upset the whole world and it is still upsetting large parts of it.

Observing what is going on in this unusual summer in Europe, on one side we hear people asserting that nothing can be the same as before, and on the other the collective behaviour seems to show that basically we are all eager to go back to "normal," - as I like to say - "put our feet back in the old shoes."

In a prevailing atmosphere of uncertainty, it is understandable that the old normal seems an appealing refuge-port, almost unconsciously rejecting the recognition that it doesn't, it cannot, exist anymore. If there is one consciousness acquisition that should remain in our memory forever is that health is the most precious asset we have.

Situations and habits that generation after generation we have absorbed and accepted have been highlighted to us in their disastrous consequences, and their negative impact on our life. Changes are necessary and we need to first embrace collective actions for a different, a more respectful/balanced way of living in our planet and the necessity of rediscovering parameters of higher human qualification as persons and as members in our global community.

Pandemic and Climate Change

The first point to stress in the search of protection from other similar human catastrophes is that pandemic and climate change are two sides of the same coin.

We have by now sufficient scientific evidence that
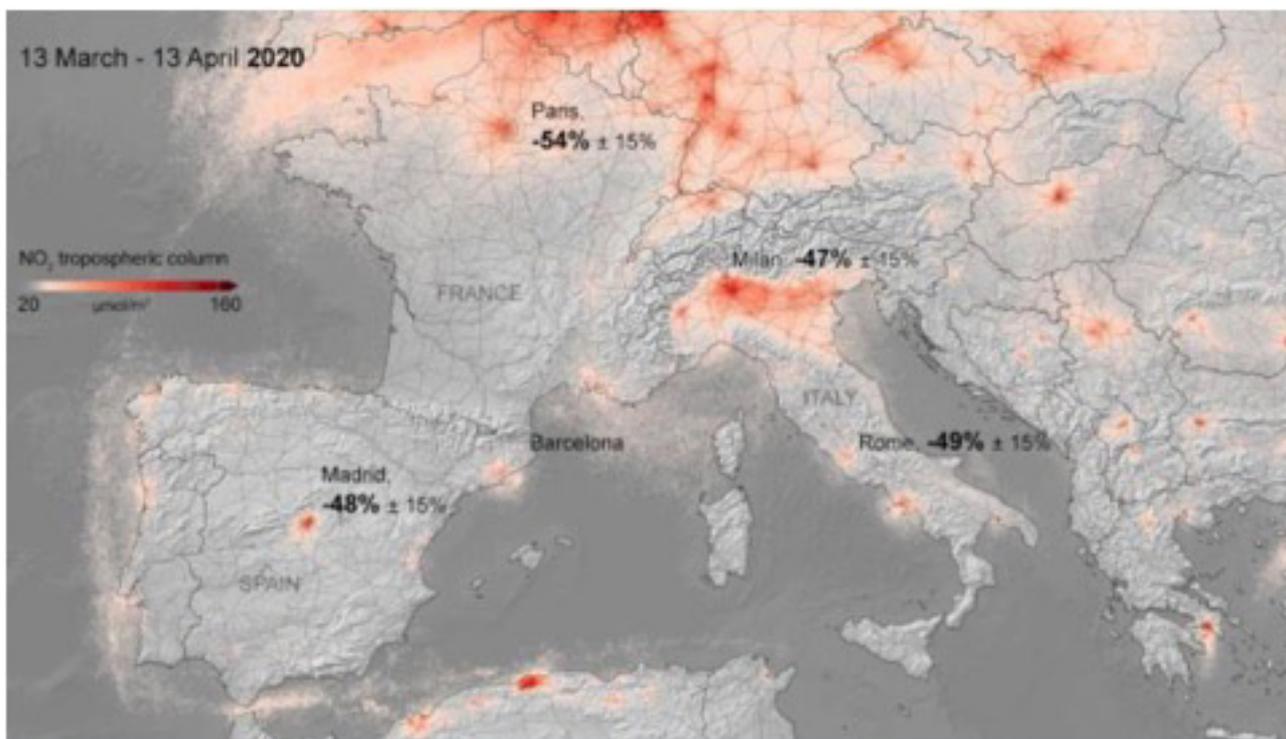
Air pollution remains low as Europeans stay at home. Image from the European Space Agency.

deforestation and reduction of wild areas, anthropologic interference in biodiversity, and effects related to climate change, could be the triggers of viral attacks. In short. the protection of human and planet health go side by side. Even if this scientific conclusion is almost universally accepted, other correlated aspects are not.

Pandemic and climate change are the symptoms, not the cause of dramatic disasters produced on people and environment. Therefore, the other awareness that we have to acquire is that the cure, the actions for a "new" normal have to be addressed not only to the effects, but to the causes behind them. What does it mean concretely?

In an article, "Why climate change isn't our biggest environmental problem, and why technology won't save us," Richard Heinberg (2017) has highlighted several relevant aspects which, in my opinion, are valid for our pandemic, even if his article was written before COVID-19. The connection is evident. Our main "ecological" problem, he states, is overshooting. This concept is well known and indicates that the demand by whole humanity and its parts (i.e. countries, cities, activities etc..) for natural and ecological resources exceeds what Earth can regenerate. It gets generally measured year by year using the concept of footprint. COVID-19 has caused humanity's ecological footprint to contract compared with 2019, pushing the date of Earth Overshoot Day (EOD) back by about three weeks. This shows the connection between anthropogenic activities and the excess of demand on natural resources. Certainly it cannot be considered the way

of solving the problem. Responses such as COVID-19 and climate change natural disasters are the symptoms of our broken relationship with our environment, for which we have to tackle the causes to achieve substantial results.

A Different Way of Thinking for a Different Approach
Overshooting, scientifically recognised as the cause of the natural disasters of which we suffer, is a systemic problem that needs to be addressed in the search for our post-pandemic new-normal. There is a need for a systemic approach, involving all components of which the most impacting are the excess of population, consumerism, pollution, loss of biodiversity, overexploitation of natural resources and other related issues.

In the '70, under the guidance of one of its fathers Lester W. Milbrath, the ecologic movement got a strong impulse from systemic thinking. Striking studies like "Limits to Growth" (Meadows et al. 1972) were produced. The work of Jay Forrester become universally known and many books appeared, one of the most relevant being "Overshoot" by William R. Catton Jr. (1982).

In most recent times this approach has left the ground to a vision more focused on separated problems. In the constant emphasis on the warming of the planet, the systemic correlation with the problems mentioned above are rarely stressed. Climate change is basically considered and treated as the cause, not the symptom.

So, in parallel, there is a need to recognise that we have
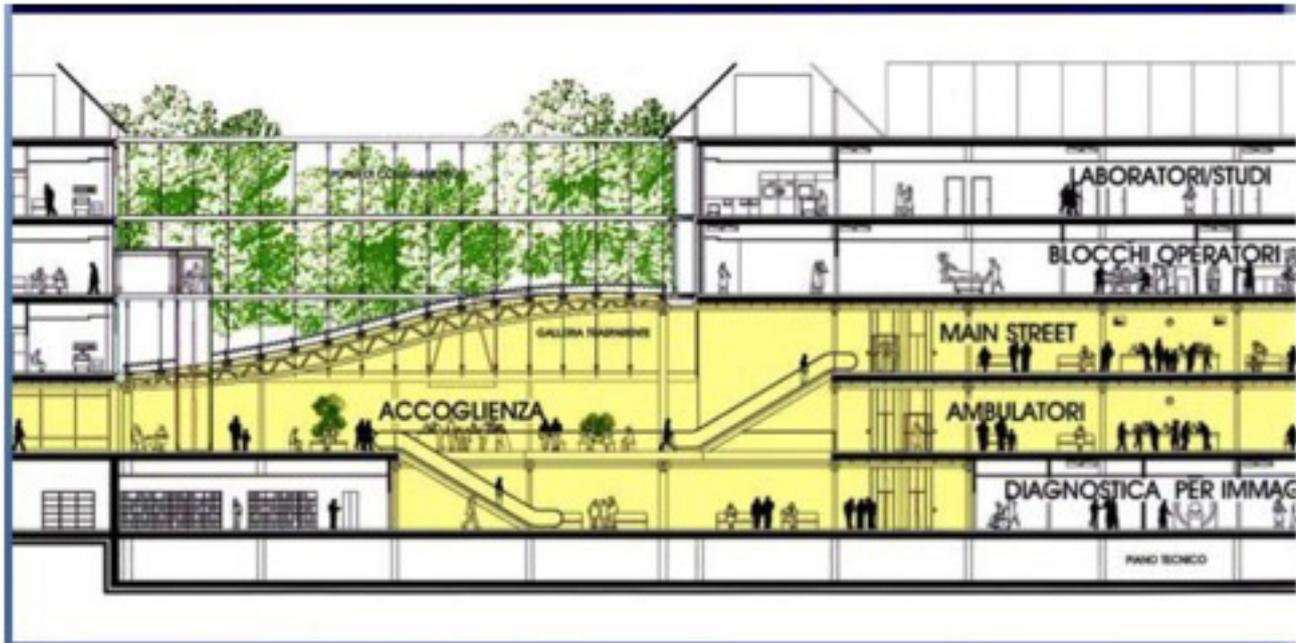
The Renzo Piano committee Decalogue for a "new" urban hospital published in 2000

primarily to protect the health of human being and of the environment. The pandemic should make us aware that, as Antonio Bonaldi (2020) clearly states in his article Verso l'Ecologia della Salute, "We must accept that we live in a hyper-connected world that offers us many opportunities, but which can also represent a serious threat and above all that it obeys laws other than those typical of mechanistic thought that have accompanied us in the last three centuries. The linear approach is important but must be combined with a new way of thinking, given that reality is multidimensional and the complex biological and social systems in which we live are not reducible to their constituent elements and do not respond to linear logics of cause and effect" (Bonaldi 2020).

Prevention and New Alliances

All this bounces back into the issues that are the focus of our interest: how to see prevention for the "new normal." No single discipline can give the clues, has the keys for reaching such a complex goal. The cooperation and the sharing of knowledge and tools is an important achievement, necessary, but not sufficient. What we need is a further step, that we have pointed out above: to embrace a systemic approach to address our complex problems as a whole, or when creating subsystems, treat them as such.

To comprehend it better concretely, let us take a small step back and focus on hospitals. In trying to analyse what went wrong dealing with the "virus," hospitals, healthcare facilities and the complex of the public health care system were obviously the first one to go under scrutiny. All over Europe at

least, it become common to stress that in the last ten years or more the prevailing policy approach was that the health system was a burden in the public budgets that needed to be reduced. What followed was that in many EU countries, heavy cuts in funds was made, and we have to add, not only heavy cuts, but also done inappropriately. The operators of the health care services analysing the impact of the pandemic promptly concluded that the deficiencies impeding the appropriate response to the emergency, were almost entirely to be charged to insufficient resources. The cut of funds producing a lack of medical personnel in all capacities, slow and scarce supply of protecting devices, exponentially increased the difficulties posed by the virus – the unknown and unexpected enemy.

Regarding health facilities, i.e. hospitals and generally the built healthcare infrastructures, they have shown to be insufficient in responding to the extraordinary and accelerated growing needs, also because of their age and insufficient maintenance. Especially among architects, engineers and generally technical health specialists, the word that has become a sort of mantra is **redundancy**, together with **flexibility**. Certainly these are two concepts that will mark from now on the so called new model of hospitals. The same appears to be the case with respect to the opening of medical schools to an increased number of students and/or envisaging new ways to attract young people toward healthcare services. These new interventions are certainly important and badly needed in many realities, characterised by non-functional old hospitals and out-of-date clinical equipment. It is probably where most of the money awarded to

healthcare by national governments and, in the case of Europe, by the European Union, will be invested. Hopefully these new financial resources will be addressed to aspects such as mitigation and altogether to the aspects of resilience that concern climate change related risks.

However this is not sufficient to be considered as necessary **prevention**. It is undeniable that new waves of COVID-19 or of other viruses, as many experts are fearing will arrive, **preparedness** and **resilience** will be very important to save human lives and to mitigate the impact, but it is not the complete, deep lesson that the pandemic, from which we are still suffering, has to teach us. We also have to consider the pandemic as an unrepeatable occasion for making human and environmental health the centre of our priority of action and this means to shoot for more impacting goals than resilience and mitigation. Prevention is this higher step; it is not a matter of only medicine, it concerns life.

We can grant that medicine, healthcare facilities in general and services, have a big role in **repairing/fixing** us when ill, and possibly helping us to regain health, but the medical experts tell us that health is guaranteed by health services in about 15-25% cases. Most of our well-being depends on the environment to which we are exposed, our style of life, the structure of the cities we live in, the quality of air, our social environment, and the food we eat. Meaning there is a complex number of factors that have to be addressed in order to build our post pandemic "normal." No single discipline will give the clues, or has the keys for reaching such a complex goal. The cooperation and sharing of knowledge and tools is an important achievement, which is necessary, but not sufficient. What we need is to take a further step: embrace a systemic approach to address as a whole, the tangle of complex relations and interconnections that, as said before, present our problems.

Anthropology, social sciences, economy, architecture and urban planning, the different specialties of medicine, biology, management, communication and many other disciplines of different fields of knowledge should contribute to build a new approach for a comprehensive prevention, platform of a new normal and of a prevention addressed to human and environmental health through the reduction of overshooting.

Urban Environment as Primary "Gym" for a New Post-Pandemic Normal

Two considerations about the response to the pandemic impact seems to me relevant. Public health authorities in many instances have been stating that the weak link of the system has been the health service in "the territory," meaning the health infrastructures for services out of cities and different from hospitals. The other, and I underline this positively, is the sudden interest for urban spaces, and the importance of design of the cities and housing. I am considering them together, because they can, together, contribute to the prevention that we would like to achieve for the

post-pandemic normal.

The idea to overcome the model of hospitals as "silos" or "citadels" has been a challenge since a long time now. An example is the results of the commission of the Italian Ministry of Health, led by Renzo Piano, that in 2000, concluded its work presenting a meta-project of open hospital, as part of the city, encompassing commercial city activities, letting green dominate healing spaces. This however did not became the model of a "web of care" distributed in the territory so that a new concept of urbanism could materialise.

In the meantime, urban areas have increased their negative environmental impact, the community sociality has given the place to urban isolation and seclusion, the living conditions are for larger areas unpleasant and unhealthy, more and more plagued by traffic problems, air and noise pollution, waste and disorder.

So, repeating what I said before, why not transform the pandemic tragedy into a unique opportunity to pursue the goal of transforming our urban areas into environments that keep us healthy and that respect health and cover the needs of people of all ages - from children to elderly?

As for the new concept of hospitals, urban designer, planners, architects together with other advocate of new ways of urban living have produced ideas and studies related to urban spaces and health. The US has been working for several years through an organisation called Congress of New Urbanism and their "Charter for a New Urbanism" (1996). It is well summarised in this sentence: "New Urbanism is a planning and development approach based on the principles of how cities and towns had been built for the last several centuries: walkable blocks and streets, housing and shopping in close proximity, and accessible public spaces. In other words: New Urbanism focuses on human-scaled urban design."

These principles and studies provide important background information. As we have indicated in the title, urban space appears to be an interesting gym to practice to change the situation of our urban areas, and to transform them from unhealthy, unfriendly, unmanageable places to live in into our best encouragement for new style of life.

The pandemic offers a unique opportunity for reaching the real prevention, but this imposes something I would say fits more concretely into the needs of our European cities at least, that, above all the cultural and historic differences, they all suffer from similar problems. An important confirmation comes from the call for papers issued by Liesbeth van Heel, senior policy advisor/researcher at Erasmus MC in the framework of ARCH21, an initiative launched to connect researchers and practitioners around the conference theme, of which the first of three first topic is: "Health promotion in society – how reshaping unhealthy environments can support the needed change in human behaviour." It confirms that the goal of improving our cities, our urban areas, starting by not accepting the decay in which they are, is of fundamental and

great importance for developing the real prevention concept for the post-pandemic normal.

Thinking the Unthinkable Through Innovation in PPI

It is certainly true that the policies of the past decades in several European Countries were oriented to the closing down of small hospitals and accepting, if not favouring, the growing of private health infrastructures. The so called "spending review" has deeply penalised the health system, at least in countries like Italy, as we have already mentioned.

It is equally true that cities, also small cities and villages, have become more and more unliveable: traffic, waste, pollution, disorder, impossible use of public spaces and green areas are the classic results in a good number of nations of the relative free hand to an urbanisation driven by economic goals, most of the time based on land speculation.

Now is the time to invest in a different way the resources that will be made available to the public health system. Innovation seems to be used as a magic word for improving our post-pandemic world. Yes it can be possible, but only if innovation is a tool understood and used appropriately.

I have learned, working in the public health system, of the opportunities offered to all the public sector by the procedure called PPI - Public Procurement of Innovation. The European Union stimulates projects of this type and, under the guide of the best possible teacher, Gaynor Whyles, I have understood its value. First of all it is a participatory process. It requires, in fact, the contribution, in the case of the healthcare sector, of people working in specific areas without difference of professional level. The importance of this experience is that it addresses an unmet need that is not satisfied by products already present in the market. A further step involves organising "market sounding," which will involve, in a totally open way, the branches of industry that could be interested. The latter have to become convinced that the innovative new products (or processes) will have a market. The tender will follow and potential producers can organise for studying and then offering them. It is not an easy procedure, but the results are surprising. New ways of cleaning hospitals beds in a cheaper, more efficient way, less demanding in terms of personnel engaged and overall more environmentally friendly, have come out in our experience, as well as other results in terms of catering, hotel services improving the wellbeing of patients. These solutions are often more sustainable and cheaper.

Innovation, as satisfaction of unmet needs or change in old procedure, used in any public area, will produce even more results, applied in the framework of a systems approach. This, in fact allows the evaluation of which interventions can produce the best domino effect and can constitute the leverage for an even more impacting result. The post-pandemic moment, when we assume there will be funds granted to the healthcare system and to the urban communities, is, as we have already stated, a unique moment for using innovation for a lever of change and having the possibility to think of solutions that were unthinkable before and get them! .

Conclusion

The long procedure in examining which foundations can have a new post-pandemic normal, has brought me to conclude that prevention is certainly the appropriate goal, if it is intended as a way to include in our actions and decisions the health of people and of the environment, which are interdependent. Certainly big policies for respecting water and save ocean and glaciers, for fighting deforestation, for a more impacting and universal fight against poverty, are indispensable but they belong to another level of analysis. To stay at what can be influenced by us, simple people, we have to contribute to the largest diffusion of the consciousness of the need for developing different styles of life, eating habits, appropriate use of plastic and others subjective choices. We have to convince ourselves that we cannot go back to the old normal, simply because it doesn't exist anymore.

The new normal needs to be founded on changes that we have to contribute to, to determine the urban structure and environment and its integration with the health system of care. These can be the foundations on which to build prevention not only against possible future new viral attacks, but also against the decay of our environment and health conditions that, without the pandemic shock, too large a population of people seemed to be getting adjusted to or consider ineluctable and to induce the policy makers, who have turned their shoulders, considering these problems impossible to solve, to turn around again and apply the new means of innovation in public procurement that can be a fundamental leverage for the new normal. ■

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