

**Short Communication***Copyright © All rights are reserved by Aldo Ferrara Massari*

AI e SNI (Shared Natural Intelligences) in Transition of DYCAS

**“Human Health Between Environment, Organization, Skilled Work, and AI Technology in the
Transdisciplinary Leap for the Governance of Change: Between Constraints and Possibilities”**

Luciano Pilotti¹ and Aldo Ferrara Massari^{2*}

¹Professor, ESP – Department of Environmental Science and Policy Strategic Management and Innovation Ecology, University of Milan, Italy

²Professor PhD retired from University of Milan ad Siena, Italy

***Corresponding author:** Aldo Ferrara Massari, Professor PhD retired from
University of Milan ad Siena, Italy

Received Date: July 17, 2026

Published Date: July 29, 2026

Prolegomena

To understand the ongoing change and its governance, it is now unavoidable to assume that we are immersed in a New Era of Human Evolution. This requires complex techno-economic and social strategies, characterized primarily by sustainability (also established in the 17 UN SDGs) and the interaction and interdependence between micro, meso, and macro contexts, and which require transdisciplinary analysis methodologies for resilience and transilience. In particular, we believe that beyond the intervention of AI that has been bubbling above (and below) the Earth's surface for just over three years (changing our ways not only of working, producing, and consuming, but also of deciding and thinking), we cannot ignore SNIShared Natural Intelligence, as also expressed in Leo XIV's recent encyclical Magnifica Humanitas. This is an expression of transdisciplinary cooperation aimed at unlocking human potential, capitalizing on it for shared prosperity, and not simply enhancing certain functions (as transhumanists would like) through their simple sum. It is then by working on the hybridization and contamination of emerging disciplines embedded in complex systems scenarios, starting from per-objects such as climate change, human health, or the transformation of cities and territories, that we will be able to better understand the nature of change (Parisi, 2025 and 2026). These phenomena are inextricably intertwined and require a New Science for new modes of political

governance of processes that require long timescales and patient capital.

In this context, we will develop only some of the emerging interdependencies, particularly those of the triple transition impacting human health (Energy, Economic, and Digital), transforming our ways of producing, working, consuming, and deciding: from agro-industrial production to manufacturing to services, from the phygital worlds to logistics and transportation (of people, goods, services, and information), also transforming urban life and mobility (as well as extra-urban mobility) with the forms of increasingly “capacitated” work and changing the very forms of living. A complex transformation that produces enormous inequalities in income, access to resources, and education, and thus impacts the capacity of public health care. Connected and increasingly interdependent sources of change—individual and collective, community and organizational, network and territorial-regional—between the local and the global, are transforming the very concept of health and care. Indeed, this underlies a parallel transition in governance and organization, with impacts on the forms of change that are transforming the very forms of power and decision-making: in (co)leadership, in lifestyles through new network organizational models and industrial supply chain production, in the forms of active participation of workers and their

institutions, as in the case of pension funds. Converging trajectories in the emerging collaboration between public and private, state and market, nature and technology.

A complex transformation toward a sustainable shift in new dynamic relationships between actors (groups, communities, and collective institutions) and systems (and subsystems, networks) capable of promoting an evolution from physical to cognitive productivity, reconnecting the material and immaterial foundations of industrial growth, including through the contribution of AI. This AI, however, hopefully guided by humanistic rather than transhumanistic approaches, as many techno-oligarchs would like (Musk, Thiel, Karp, Andressen), aims to reduce and even eliminate the role of the state and democracy itself, replacing them with techno-dominance and the hybridization of an enhanced human as a substitute for the Human. This vicious outcome risks changing the very categories of health and well-being, as well as those of care. The crucial issue for the entire planet, then, is to shift the axis of gravity from the Health-Environment system to the Health, Environment, Economy, and Technology (SAET) system, based on three key exemplary moments. a) technological pluralism, shifted from the technical dimension of solving individual problems to networked technopoles (to be understood as the governance of decisions through the potential of shared access technology); b) the participatory economy (civic and social), eliminating the illusion of unlimited growth on a planet with finite resources that must necessarily be diverted towards renewable resources, beyond the fossil and linear economy with high energy and human waste.

1.1. Some theoretical and methodological aspects “beyond” the One Health philosophy: a broad interpretation of the triangulation of Health, Environment, and Techno-Economic and Eco-Social Sustainability There are five main factors to consider to frame the ongoing changes and the methodologies useful for addressing them, starting from One Health approaches.

a) Climate change, although “obscured” by widespread and transversal denialism despite the heatwaves of June 2026 (which follow the increasingly intense ones of previous years), has further accelerated widespread and chaotic urbanization and the interdependence of previously linearly connected variables, resulting in increased demand for services, particularly healthcare. In the constant attempt to increase life expectancy through shared well-being, and possibly overcome the problems of gentrification driven by rigid center-periphery patterns by adopting polycentric planning and smart, decentralized cities. The Dynamic Complex Healthcare System (DYCHS) must therefore adapt to resilient (structural) and—as we will see—transient (role-related) conditions, which require adjustments to economic chains (the Complex Cognitive Productivity System) in the transition from fossil-fuel-based production—i.e., low profitability and limited autonomy—to integrated systems in which profitability can be increased by relying on broader, renewable resources that connect cognitive productivity through DYCHS (e.g., personalized care and networking of community or community medicine). The three systems described above are produced by a Transdisciplinary

Cognitive System that requires the intervention of Shared Natural Intelligences capable of the broadest and most comprehensive interpretation possible of the phenomena described by CAS (Complex Adaptive Systems) approaches. These systems also involve cognitive-emotional health, which involves models of self-organization and work empowerment, beyond the executive model handed down to us from the 1900s.

b) The awareness (mindfulness) that, during the current century, the pathologies we will encounter in patients will be environment-dependent (including digital health), with a forecast of 25%, will lead to the assumption of social responsibility in a public (and collective) paradigm, shifting DYCHS from the individual to entire micro- and macro-communities, where pollution will be found in water, soil, and air. This necessitates a new, concerted approach to the transition of healthcare, understood as treatment within a vision of global precaution, not as a principle but as the implementation of a sustainable and horizontal path, involving increasingly large clusters of the world’s population and global healthcare institutions.

c) The key word for this process just mentioned will therefore be Transdisciplinarity, which will lead us towards Integrated Cognition, useful for integrated responses to the health of individuals and ecosystems (communities, inter-organizational and supply chain networks, megacities, and non-urban areas). This in turn will form the basis of the Production Chain Economy, governed by adaptable and cognitive productivity based on shared knowledge, across real and virtual networks. This will help bridge the gap between average productivity growth (more routine workers and more automation technology) and marginal productivity decline (less routine workers and more non-routine workers with more AI technology), which will serve as a basis for measuring AI’s potential contribution to shared growth. One might then ask how modern modeling and simulation can help understand the interaction between health, the environment, and the economy. Modeling and simulation offer powerful tools for exploring and understanding the complex interaction between health, the environment, and the economy. Recalling some of these methodologies can therefore also be extremely useful for exploring their interdependent and transdisciplinary relationships.

d) The Dynamic Complex Healthcare System (DYCHS) in turn consists of interactions within it in which the concept of health must be broken down into health understood as the prevention of pathologies that pass from a single clinical expression to the involvement of entire communities afflicted by global pollution, and healthcare understood as the treatment and correction of previous damage, both of the individual patient and of the civic community afflicted by environment-related pathologies. In turn, the concept of Environment must also correlate with the declination of the term itself as external environment (outdoor afflicted by anthropogenic pollutants) on the one hand and - on the other - indoor, characterized by pollutants today considered natural coexisting elements of daily life).



Figure 1: The Pyramid of Discomfort in the developmental age preceding the use of narcotic drugs.

Each of these Dynamic Complex Systems involves a sub-articulation with economic repercussions and consequences of a magnitude that is barely appreciable if examined quantitatively and not in terms of integration with other causes of economic dissipation or dispersion. To summarize, the correction of the problems related to DYCHS of collective interest on airborne pollutants ends up creating a black hole of €5 billion for treatments, work absences, rehabilitation, etc. The problems of Youth Discomfort, in which Digital Discomfort is occupying and worrying professionals, lead, according to the Public Accounts Observatory, to growth that has

lasted for more than twenty years. In 2025, the gambling sector in Italy will have reached impressive dimensions: €165 billion wagered, 7.3% of GDP, as if each Italian (adult) had gambled €7.65 every day. This sum represents 85% of Italian household spending on food and more than double spending on insurance and financial services. The net loss (bets minus winnings) is the highest in Europe, both per capita and as a percentage of GDP (Figure 1). The phenomenon's pathological trajectory is evident in the global chaos and the confusion of ideals and values induced by social media.