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The Organic District: a cultural turning point

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SUMMARY
Objectives: this article aims to show how an erroneous concept of agriculture based on a proto-scientific knowledge of the sixties, founded on chemical synthesis and forced mechanization, has been crushed by the knowledge we have since gained but which seems to have been culpably concealed and/or underrated in terms of ecosystems and of its implications on the basis of epigenetic, biomolecular analyses. The delayed discovery of 1. the need to measure ourselves with a closed system of reference 2. the dependence, even genomic, on an invisible and omni pervasive microbiota 3. the reliance on a fluid genome that duly registers epigenetically within us the outside world 4. the need to give value to, to emphasize and protect the integrity of our natural air-water-soil matrices. All existential preconditions which oblige us to totally reframe the mechanistic, linear algorithms that pervade the present, but which prove to be anachronistic and unscientific.
Methods: the available data invoking a change in paradigm has been taken into consideration. The starting point is the orientation and the logic inspiring the European Community's legislation on organic districts.
Results: a case is made for the interconnectivity that inhabits us, the relationship between the context and the genetic-epigenetic-microbiome triad, the imperative to substitute an epistemic of predictability which is fallacious on account of the reductive variables considered, the hyper complexity of the infinite variables in a biological system based on creativity and autopoiesis, on serial and interim adaptations in dynamic evolution. The results speak unequivocally of a necessary and rapid conversion to agroecology to avoid the definitive destruction of our matrix that would lead to an unamendable process of multispecies extinction.
Conclusions: there is evidence beyond any reasonable doubt of the need for a rapid assumption of political ethics and leadership to control and marginalize the risk producers, to reestablish the right to health, environmental and food quality and furthermore beauty itself as a nutritional element. All in the greatest respect possible for biodiversity and all the creatures and things with which we share a common destiny.

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Introduction

The concept of the territorial entity Organic District (OD) already appears in its substantial definition in the decree law "Organic Agriculture" of 29/11/2007, art.7, in the chapter of the same name, identifying 'local production systems…with a marked agricultural vocation according to art. 13 of D. Lgs 18.05.01 n. 228, and in which are absolutely preponderant: (A) the cultivation, breeding, processing and alimentary and industrial preparation of products with organic methods…; (b) the tutelage of typical local cultivation, breeding, transformation and production methods' (bill 'Organic Agriculture', 2007).

The problems of territorial vocation were delegated to administrators on regional suggestion, with congruity indicators (for example based on the theory of fuzzy sets) to prevent discretion, to the evaluation of human capital based on real generational change and a marked tendency to commercial and technical innovation. The fundamental factor was (and is) the establishment of a quality rural district, persisting yesterday and today the question of whether the quality mantra should be a prerequisite for the OD or its purpose. We take notice from the start of how quality is understood as a possible, but not exclusive, declination of agricultural processes and production, and how in the overall view top-down choices dominate.

With a ten-year jump, Law 205 of 27 December 2017 the Ministry of Agricultural, Food and Forestry Policies (Mipaaft) identifies the Food District as a new strategic container, in territorial proximity, to revitalize the rural districts, including the organic districts, with the establishment of a National Register of the Food Districts indicated by the Regions and respective autonomous Provinces. The proposition is the relaunch of supply chains, the territorial safeguarding and development, food security, the reduction of food waste, the reduction of environmental and landscape impact, through quality agricultural and agri-food activities, but also socio-environmental urban-peri urban requalification, and intersections with proximity activities. The national and community defining aspects absolve the necessity to identify those who are likely to benefit economically, especially from the Community, with capital contributions, assuming a certain set of beneficiaries. To give an example in Prot. NO. 10898 of 17.02.2020, 'Notice bearing the characteristics, modalities and forms for the submission of applications to access food districts as well as granting arrangements of the facilities referred to in DM.7775 of 22.07.2019', article 4.1 regarding the eligibility conditions states that 'the district contract aims to promote territorial development, social cohesion and inclusion, to encourage integration of activities characterized by territorial proximity, to guarantee food security, to reduce the environmental impact of production, to reduce food waste and to safeguard the territory and rural landscape through agricultural and agri-food activities. The district contract

must therefore also favor reorganization processes of the relations between different subjects of the supply chains operating in the territory of the food district, in order to promote collaboration and integration between the subjects of the supply chains operating in the territory of the food district, to stimulate the creation of better market relations and to guarantee, as a priority, positive effects on agricultural production'. Article 5.5, and not only, considers as a necessary precondition for the project that 'investments must comply with the environmental requirements laid down in the RDPs of the regions in which they are made'. In particular, 'the measures must comply with national and EU environmental protection legislation and good agricultural and environmental conditions (GAEC) as provided by Article 93 of Regulation (EU) No. 1306/2013'. In the same enforced notice, I draw attention to the ethical aspect for beneficiaries with the possibility of proceedings for mendacity and/or fraud, bribery, and environmental crimes.

The objective of this report is to demonstrate that the national and Community framework is affected by incorrect reference frames in terms of inspirational value hierarchies, anachronisms, and distortions due to scientific-intellectual deficiencies in the evaluation of accumulated diachronic implementations from data-science, and for some reason still ignored. I specifically refer to the necessity that before every productive-commercial process we place the concept of environmental, social and individual health, of knowledge of the contextual aspects forming and informing our existence, of safeguarding decent life prospects for future generations, of the perception-knowledge of what ecosystems are in reality, as well as what is a truly circular economy (waste management-recovery, state-owned properties, cultural and environmental emergencies, alternative sources, regenerative planning, control on industrial and business planning…), in short, the awareness of the precariousness of living in a closed system that presupposes the meticulous knowledge of the connections-interferences and rebound that we must be able to recognize, read and interpret correctly. Knowledge activates consciousness: knowledge which, in order to be such, presupposes interdisciplinarity, foresight, precaution (knowledge is modified and refined) and which justifies in the logic of social protection the possibility of Kuhnian paradigm changes, even if drastic, for the higher purposes of respect and social protection, especially when, as in this case, the theme is our survival. When, for example, we talk about GAEC, how should we judge the current point of arrival that finds us deeply compromised in terms of the environment and individual health? Has the system regulated so far proven successful or unsuccessful? What are the forecasts of continuing a slower but unamended pollution process? Moreover, is the OD an immaculate enclosure, an enclave, in a degraded system or should it not rather be chosen to become the obligatory reference in a process of containment first, cleaning and then

returning to the sustainability of the deteriorated system? What is the concept of quality applied to health processes knowing that over 90% of all our diseases are environmental and/or lifestyle-induced? Is health the primary asset or banal addendum to logics of powerful minority stakeholders in the economic-financial field? Is there still a right to health, to 'bonum et pulchrum' and by whom should it be represented and protected? But, above all, who within the political-economic-health level will pay for the current damage caused by incapacity, blindness, personal interests? Will the huge community of the exposed still have to be sacrificed to the oligarchies animated by social and health contempt? In the case of science and culture, what is dramatically emerging from the above-mentioned excerpts is that agro-industry and agro-ecology are still a double equal mode of good practice; then, who and what is causing the environmental disaster of which we are the sacrificial victims? It is clear that a radical rethinking, a reformulation of sense, priorities and socio-educational aspects are necessary, considering, moreover, that ironically, the last-resort payers are, concretely and medically, precisely us. No longer low level make ups then but in-depth analysis based on 'virtute e canoscenza', exactly in the order proposed by Dante.

Materials and Methods

The publication 'Distretti Biologici e Sviluppo Locale, Linee guida per la programmazione (Organic Districts and Local Development, Guidelines for programming) 2021-2027, ReteRuraleNazionale 20142020', made with the assistance of the European Agricultural Fund for Rural Development (EAFRD), 'within the activities foreseen by the National Rural Network Program 2014-2020', under management Mipaaft, was considered as a reference. The document is in fact 'Project file CREA 5.2, Actions for organic agriculture'. CREA stands for Council for Research in Agriculture and analysis of the Agricultural Economy. A noteworthy mention emerges in the publication, concerning the concept of the empowerment of local communities, thus reiterating the social function of agriculture, the necessity for short supply chains for extensive cooperation, considering the pedo-climatic characteristics, territorial resources, and its socio-economic characteristics, so as to avoid depopulation and to attenuate the environmental emergency. It is explicitly stated that 'the organic district has the task of identifying the priorities of the territory and bringing them to the attention of the administrations…' (p. 7). The primary proposition is group certification for small farmers, facilitating the Community regulation which has been in operation since 1 January 2021, in which ODs, once the individual access requirements are met, may preside over a 'system of internal controls within the group of operators providing a documented set of control activities and procedures under which a person or body may be responsible for verifying compliance with the Regulation'

(Reg. EU No 848/2018, Art. 36, paragraph 1, point g). It is asserted that internal controls will in any case be viewed by competent authorities or by a delegated body (Reg. EU No 848/2018, Art. 38, paragraph 1, point d), and the real possibility arises for ODs, within State/Regions, to assume the role of legal entity, especially if the extension, cooperation, networking, agricultural-cultural innovation become steadily implemented at community level well over the current 5.4% of the national territory (3.5% of the population).

Imagining the OD as a defined and limited territory, the hope is that it functions as a yeast for its rapid and broad expansion, not as 'péras' (border) of a 'èidos' (form), but a dynamic reality of crossing the border itself, of shifting the Latin 'terminus' for explorable semiospheres of high cultural significance, in opposition to the Latin 'limen' nuance of an impassable border.

The report presents an outline of the context-sensitive areas which makes it undelayable to assume agro-ecology as the objective and the necessity of a broad interregnum vision of nature to understand that globalization of knowledge is a priority as it is salvific over commercial and financial ones and, moreover, no longer an optional tool for political decision-makers who want to call themselves such.

In support of this 'ecosophical' vision, neither utopian nor metaphysical, a truly new anthropology, I will briefly address the problem of the environment as containing precious limited resources (currently, we consume one and a half times the available resources) and will try to highlight the importance of noting the complex interconnections in nature and how crucial they are for our own psycho-physical balance. I do not speak therefore of the vast 'cosmotheandric' vision of Panikkar, but of our narrow 'cosmoandric' sphere strictly for what science tells us today.

In order to do so, I'm addressing four topics: 1) the environmental context of reference, 2) the relationships of the plants, model of complexity and vulnerability, 3) microbiota and epigenetics, 4) nutritional quality.

Topics that appoint the OD as the only ecological and respectful alternative to natural cycles.

1. The Environmental Context of Reference

The need to respect the environment could easily be seen, even in man's fiercely defensive anthropocentrism, if the 'featherless biped' of Platonian memory reflected briefly on the fact that only miraculous characteristics (optimal atmospheric conditions, presence of vital matrices, particular angle of the earth's axis, ideal exposure to solar rays activating the vital chlorophyll photosynthesis…) guarantee our late entry to the planet; a planet that has satisfied our needs by adapting itself to our intemperance and dire myopia. Referring to the soil '… the thin layer of weathered

rock, dead plants and animals, fungi and microorganisms blanketing the planet has been and always will be the mother of all terrestrial life – and every nation's most critical resource, one that is either renewable or not, depending on how it is used.' (1) the correct interaction of species presupposes biodiversity in its declinations of species (alpha diversity), community (beta), regional (gamma), in which the same agricultural use should be subject to self-healing disciplines (2), for example without leaving the soil bare, condition that makes it 10 to 100 times more vulnerable to erosion, systematically exceeding 1 mm per year, resulting in the abandonment of 30% of cultivated areas from 1990 to this day. The soil must also feed itself and requires fuel for microbes, various invertebrates that build the autopoietic network, allowing for greater water permeation and therefore resilience to drought and flooding. Organic cover material and mulching provide more carbon to the soil, thus creating conditions for a balanced biota, containing the role of pathogens in biodiversity and intercropping (3-4). At present, 80% of the 1500 million hectares of agricultural land is in monoculture; 90% of corn and soy produced is not for human use (animal feed, biofuels); on the other hand, 70% of the food we consume comes from farms of small-medium farmers who use only 20% of the soil. The loss of humus, carbon and organic matter has led to the exponential increase in chemical products with sequential groundwater pollution, resulting in 'chemical treadmill' in foodstuffs. The spread of fertilizers alone rose from 14 million tons in 1950 to 180 in 2015 (5). The massive introduction of chemicals began with the need for the disposal of byproducts from the industry and the Haber-Bosch process which allowed the use of synthetic nitrogen by making apparently obsolete crop rotations and the use of animals, now releasable from the expensive mechanism of their nutrition (6), yet at the same time, triggering the lucrative and devastating market for intensive farming. The obsessive replication of monoculture sustained by chemistry has deconstructed the delicate characteristics of the soil, distorted the microbiome and almost abolished biodiversity (7) with increasing phenomena of parasitic resistance and the need for growing increments in phytopharmaceuticals with relative further toxicity. The discovery of agricultural biodiversity as a resilience factor is, astonishingly, only making its way now. If we look at drought damage, it affects already fragile monocultures in a differentiated ways; corn and soy production has decreased by 30%, making it wiser to introduce sorghum and millet into perspective. (8). Contrary to what we have been led to think, it has long been known that to feed 9 billion people in 2050, agro-ecology will be required (9, 10). The need to combine the agricultural and forestry sectors stems from the evident need to mitigate the negative role of the food sector in terms of greenhouse gas emissions, amounting to 30% overall (release of CO2 and nitrous oxide from fertilizers into the atmosphere is 300 times more harmful than CO2 (11),

and 30% of the world's final energy consumption with 2/3 of this energy used for food processing, transport and preparation of food with a strong contribution to the dead areas of the world due to excess phosphates and nitrates (12-13). It is important to note the harmfulness of pesticides, herbicides, insecticides directly responsible for cognitive dysfunctions, dysendocrinopathies, behavioral alterations, lymphomas, childhood leukemias, loss of IQ in children (14-15). It is worth highlighting the dramatic health costs of the use of pesticides, as shown by the largest three-year study ever conducted by the New York University Medical Center (16), data provided by the National Health and Nutrition examination Survey (NHANES) which attributes to them 2/3 of the costs deriving from the development of systemic, endocrine, and neurological diseases with intellectual disability in 43.000 children and a cost of $266 billion. We can also prefigure the conjunction of the rate of variation of the average temperature from 1981 to 2019 in constant growth and extreme temperature indices that sees 2019 as the 24th consecutive year with WSDI (Warm Spell Duration Index) indices higher than the climatological average (ISPRA, State of the Environment 94/2020, Year XV, SCIA referred to 2019), with the erosion of the soil mentioned above and the summation effect of an accumulation toxicology. ISPRA also stated in its national report 2018 'pesticides in water' (referred to the two-year period 2015-6) that 67% of surface monitored waters and 33.5% of subterranean waters contain pesticides, with an average cocktail of 5-55 substances with prevailing herbicides (52.5% for surface waters, 43.4% for subterranean ones), atrazine, metolachlor, glyphosate and its metabolite AMPA, alpha-amino-(3-hydroxy-5-methyl-4-isoxazol) propionate acid. Second place in surface waters is insecticides, 25.3%, with the neonicotinoid imidacloprid currently banned, among the most present and fungicides in subterranean water 32% (17). The origin of many pathologies due to exposure to pollutants is certain, such as the biomagnified transgenerational effect to DDT (DichloroDiphenylTrichloroethane) in the case of autism, through the recent plasma detection of the by-product-biomarker DDE (p, p'- DichloroDiphenyldichloroEthylene) (18). But exposure to these pollutants also concerns the etiology of multiple sclerosis (MS), of most neurodegenerative and autoimmune diseases (19), obviously linked, as we will see below, to the drive of facilitating pleomorphic genetics (in the specific case MS the HLA-DRB1*15 allele is a negative factor, the HLA-A*02 a protective one). The breaking of balances in the soil and in the atmosphere through the introduction of nanoparticles, also from agricultural activities skipping the blood-brain barrier and constituting, at the cerebral level, non-chelatable diachronic inflammaging processes, causes vascular and cardio-cerebral de-structuring (20). Moreover, the carbonaceous particulate matter from biofuels, biomasses, DEPs (Diesel Exaust Particles), has characteristics of genotoxicity, neurodegeneration and carcinogenicity, causes additive

effects with respiratory and allergic problems (allergenic aerosols) with additional dysregulation of the pollen circulation, by the mechanism of the hitch-hiking which also concerns viruses and bacteria. 'Global warming affects the intensity, derivation and onset of the pollen-spores season as well as the allergenicity of the pollen with enhanced photosynthesis and reproductive effects and pollen-production' (21). The Lancet Planetary Health has clearly shown the connection between particulate pollutants and cardiovascular diseases due to climate change, however, it has not been possible to establish a threshold for nitrogen monoxide below which there was safety in terms of mortality (22). In the interaction between climate change, VOCs (Volatile Organic Compounds), agro-industry and matrix pollution, modifications in the colonization of the respiratory tree and antibiotic resistance take place (23), as well as changes in the psychopathological sense (24).

There is no doubt about the relation between global warming, neurotoxicity, and the increase in fine particulates, also in combination with lipopolysaccharides. The transit to the cerebral level is carried out by the nasal way through the olfactory bulb, by the respiratory way and by ingestion: by the hemolymphatic way, overcoming and altering the permeability of the blood–brain barrier with proinflammatory deposit of amyloid and tau filaments, direct damage by neurotoxic substances (e.g. manganese, aluminum, etc.) with alterations of memory engrams, especially episodic memory, by 'endocrine disruption compounds' with the abolition of protective factors of gender, formation of proinflammatory cytokines, development of full-blown and Alzheimer dementia frameworks. (25- 29, 30 - 32).

The theoretical prerequisite for 'development' and the 'green revolution' was the inexhaustible availability of water and fossil fuels in climate stability. None of these requirements survived but the behavioral paradigm had no deflections with the obvious consequences of extreme and increasing environmental degradation (9, 10, 33).

We are painfully learning the problems of interconnections and interdependencies whose value of positive synergy is strictly linked to the maintenance of harmony (armòzein = linking) according to the rules of natura naturans, and not ours.

In order to better understand the logic of the hyper complexity in which we are immersed, I will mention some relational mechanisms of plants, in other words the interconnections which they, like us and all creatures, establish, modify and undergo. These are not abstract epistemological implications, but the understanding that processes are rarely linear, the variables largely unknown, with limited constants that preside A/R (action/reaction) and the principle of causality, where, even if we can talk of some predictability starting from deterministic chaos, unpredictability and non-linearity remain prevalent. We can only talk about the horizon of predictability, focusing on complex adaptive systems that justify predictability criteria.

For this reason, I speak of multi-transdisciplinarity in a plurisystemic vision which cannot be an interpretation, but a transcription of the data-reality that comes to us from present knowledge. As an informative route, I will touch on some considerations concerning new explorations in the communication-behavior of plants, and on the revolutionary entry in hermeneutical and epistemological terms of microbiomics and epigenetics, which affect all living organisms starting from plants, that represent 98% of all biomass and are vital for the planet. Such an extraordinary extension is not only evidence of a successful model of inhabiting and colonization, but of careful protection of the soil, where even the most feared weeds play a decisive role in the protection and maintenance of the humus and the microbiomics-mycorrhizal network.

2. Plant Relations - A Model of Complexity and Viability

We can apply to plants, as for the animal world, the concept of genomic-epigenetic network: they also have interactions for complementarity/compatibility/insight (niche effect); share via models of success and trans-order and trans-species gene transposition; homologies-analogies via the sharing of the genetic homeobox (as, for instance, the ancestral cryptochrome which frays in differentiated photoreceptors in plants and in man); sense-perceptive mediation translated by A/R or by the interposition of mediators. To give an example, the glutamate receptors that in humans manage memory, learning and interpersonal communication, in plants are cell signaling devices (34 - 41). The exogenously induced experiential-epigenetic data, as for us, and the endogenous listening data are mediated by individual and collective memories. In plants there is a diachronic spatial memory, and the possibility of communication mechanisms, even volatile, that exceed the limit of autotrophism for wider information. Among the memories there are qualitative-quantitative ones of exposure to light via photo-electro-physiological signals with excessive photosynthetic load that inform the young leaves through old ones. Short-term memory has been demonstrated in carnivorous plants (Dionaea muscipula, Drosera capensis) in relation to the presence of protein contact and to a limiting and sufficient number of evoked action potentials, just as epigenetic memory, as in the case of the FLC (flowering locus C gene) from vernalization (Arabidopsis thaliana L., ATL), or the water or salinity stress on Zea mais L. With LTM, long-term memory, and STM, short-term memory, learning and decision-making are activated. Plants 'are able to encode spatial and temporal information, and to modify their behavior on the basis of the information present in the environment' (54), developing responsive behaviors to classical and operating conditioning as well, but in harmony with the inside/outside of the plant by means of repressor and promoter genes in a multifactorial logic that manages flowering, sprouting, or decrees project abortion, perhaps for unfavorable biotic/abiotic condi-

tions, in an ultra-individual logic of species survival (42- 56).
Life is therefore organized through learning, which in turn is organized by memory via competitive and collaborative aspects. Through the phloemic vessels for lymph and the chlorophyll photosynthesis the miracle of CO2 intake is achieved, which, combined with soil H2O, causes the formation of sugars and oxygen then released into the atmosphere. The absorption of soil nutrients takes place thanks to the radical hairs of the rootlets which have a protective cap of the meristem (embryonic tissue present in roots and sprouts). Plants have senses and therefore morpho function logic for refined sense-perceptions. A small plant such as ATL has at least 11 photoreceptors (we have 4); the possibility for the plant of a distinction between real water (radical increase) and the recording of its flow with the capacity for vibrational discrimination is known. A preference for the development of buds, flowering and length of branches, for natural sounds of birds or Indian or Western sacred music (sacra) has been measured; a differentiation capacity between the noise of the wind and that of the mastication of the caterpillars. The roots of the plants, through the interaction of gravity-touch circumnutate, causing oscillations and deviations in search of nutrients, oxygen, and water (hydrotropism). Light uptake from roots through the HY5 protein that develops healthy roots has been demonstrated. The plant management capacity emerges in the recognition of self - no self that prevents self-fertilization processes for the same individual or for genetically related individuals, through radical recognition and not only (chemical exudates, surface enzymes, individual microbiome, COVs, electrochemical signals) that change social behavior. At root level, colonization for access to and management of mineral-water resources can be increased, with morpho-functional adjustments in the event of, for instance, drought. We can therefore speak of the decision-making capacity of a plant (57-58) and of optimal development in harmony.
We can firmly say that we are confronting a widespread Wood-Wide-Web of extreme complexity where synchrony and diachrony are mixed in a unified field of difficult reading. Climatic changes can render philo-ontogenetic adjustments and selections unfavourable to our existence. Nitrogen-fixator bacteria (nitrogen, 80% of the air we breathe, not useful except for the action of nitrogen-fixators that transform it into ammonium nitrogen, thus making it assimilable by plants which release proteins and sugars) and mycorrhizae (exchange between soil fungi and roots, in other words phosphorus in exchange for sugars from photosynthesis) allow for vegetal development in the logic of cooperation. Bacteria dialog with roots in genetic-epigenetic exchanges (NOD genes) for the activation of synergies. At the same time, epigean endophytes (fungi and bacteria) defend the plant by making it toxic to aerial attackers, and the CMN (Common Mycorrhizal Network) allows informational and nutritional ex-

changes between roots and the fungal network. The radical detections allow stomatal modulation, inducing their closure to reduce the water dispersion in case of drought. The plant bacteria ratio is widespread and goes far beyond the classic bacteria-leguminous binomial. This is documented in the case of rice. In this sense biomass sums microbiome, microalgae, nematodes, fungal hyphae, protozoa. The microbiota, understood as a bacterial community beyond the previously mentioned properties, allows the solubilization of phosphorus, the defense of the plant, the production of plant hormones, the harmonious growth of the plant (59- 67). With CMN, an informative-nutritional exchange and immunological priming is activated for the mutualistic-symbiotic action of the hyphae. Carbon, nitrogen, phosphorus, and mineral salts may be exchanged and transferred, for example, to young neighboring plants in difficulty, in exchange for photosynthesis sugars, essential for fungi. Mycelia can produce warning chemicals for neighboring plants. Plants deprived of mycelium are immunologically depressed, but in case of the use of herbicides, or also naturally as for the walnut juglone (Juglans regia L.), the toxic mycelial conduction can result fatal to the plant (allelopathy). The communication between plants includes the emission of VOCs, molecules containing carbon (over 30.000) and uses volatile forms of jasmonic acid (e.g. MeJA, methyl jasmonate, stress phytohormone), or exenol, in case for example of aggressions or damage, as well as ethylene, salicylic acid, which allows alertness in genetically and non-related plants. Some allelochemicals, such as synhormones, may attract parasitoids/predators that come to the aid of the plant emitting them. The development and metabolic aspects, at the end of reproduction, are carried out by the phytohormones, in particular, by ethylene produced by methionine for maturation and stress, abscisic acid (ABA) for stress (dormancy of seeds, and buds, radical formation when needed, stomatal closure) highly hydro-conditioned, auxin produced in the meristem, in fruits and seeds in development, in leaves, with the action of promotion of cell division, cytokines with synthesis, mostly radical and via xylemic transport, involved in the cellular differentiation-proliferation and leaf senescence, gibberellins linked to transient phases of elongation-growth of the plant. (68 - 77). From this brief analysis similarities emerge between plants, animals, and insects characterized by similar sequences in all clades, with human sharing in genomic terms (3000 genes for plants, 5000 for insects) in the long process of convergent and divergent evolution. Possibly, ubiquitous ATP (adenosine triphosphate) was already synthesized in a prebiotic context and has worked as a development promoter by directing the development of primary metabolism (modification and synthesis of proteins, lipids, sugars, and nucleic acids) towards morpho-functional and energy determination (for instance, the Krebs cycle performed in the mitochondria of eukaryotic cells is common to all living cells) (78).

Interregnum balances are therefore dependent on complex and fragile interconnections: addressing Brucker's studies, we identify the hologenome (the capacious hologenome) (79) as the sharing of a common ancestor, and a common destiny.
The 'single-celled common ancestor', with plant-animal support features, seems to have appeared approximately 1 billion years ago. In the widely accepted endosymbiotic theory of Margulis (80), mitochondria and chloroplasts would derive from prokaryotes introduced into major cells with the formation of eukaryotes, in the context, naturally, of multiplicative genetic events that left the ancestral organism with abundant 'spare genes'. The nervous system in animals and chronoflagellates (the same calcium and sodium channels for neuronal electrical activity and proteins releasing neurotransmitters in animals), due of course to the long process of evolution, dates back to about 600 million years ago. The construction of interdependence and interconnection is a natural, subtle, hypercomplex process hence the discovery that our intestine (in fact, every district within our body) possesses 100 trillion microorganisms that until yesterday were only supposed to crowd the soil (up to 1 billion per gram of dirt) should not have surprised us.

3. Microbiota and Epigenetics

Microbiota has been permeating our plant-animal co-evolution for at least 400.000 years, representing in our own genomic terms more than 140 times our celebrated classical genomic kit. In other words, the microbial collective unconscious inhabits the human body, even determining its morpho-functional and neurotransmitter aspects, which are pompously claimed as distinctive of humans and decisive in the cognitive nature of motivation, in higher nervous activity. For instance, a small wheat plant is characterized by 25.000 genes and 16 billion nucleotides; in this sense, we prove to be less endowed than an onion, a discovery which has prompted disturbing inquiries following the end of DNA sequencing (2006), forcing us to profoundly revision the concept of ecosystem and introducing, after microbiomics, epigenetics as an adaptive mediator of our outside-inside. We define the microbiome as the genomic aspect of the microbiota, referring not only to the bacteria complex inhabiting us, but also to the viral one (virobiome), the fungi (mycobiome), the bacteriophageoma, parasites and others, precious symbionts and commensals only if in harmony with our body-vehicle. The microbiota situated next to a shared phylogenetic nucleus is individualized (1000 phylotypes), linked to the environment, lifestyle, ethnicity, and nutrition. 80% of bacteria are linked to fermentation (Bifidobacteria and Lactobacillus), 20% to putrefaction (Bacteroides, Clostridium, Escherichia, Eubacteria) (81- 88). By 'epigenetics', we identify the infinite genetic expressions that take place without genetic structural modification, yet altering and adapting our

existences to the environment. (89 - 92). An exemplification could be the previously mentioned 'FLC gene', which turns off 'a frigore' by chromatographic packing by histone methylation; subsequently, the histone code is re-programmed, in this case in transgenerational logics, a sort of jumble of procedural memory but also semantic and autobiographical-episodic vegetal memory. The epigenetic processes of vernalization via morpho-functional imprint concern the entire biological world and take place through histone acetylation-methylation, DNA methylation, microRNA formation, prion appositions, histone ubiquitination, etc... Increasingly acknowledged has become the role of miRNA, 20-22nucleotides, of endogenous origin and encoded by a thousand genes conserved through evolution, not with protein synthetic function, but rather intended for the stability-translation of hundreds of genes' mRNA, aimed at cell control-development-apoptosis, in addition to the management of stress in terms of immuno-modulation and response to inflammation; in other words, to correct allostasis synergistically with basal metabolism. We have to imagine that although epigenetics is indeed adaptation to the environment, there is a vital limit to the effort of incorporation, which cannot be activated, for example, for massive or transgenerationally unrepairable damage. The destabilizing event, simply put, must be small and not prolonged over time. To further stress this concept, we should remember that normally up to 500000 molecular lesions per cell are inflicted to our DNA daily, through hydrolysis or mismatch of bases, or their alkylation and oxidation. If the offensive load is too great or repeated, the reparative mechanisms (MGMT, MethylGuanineMethylTransferase), apoptosis, base excision repair (BER) by activation of a DNA-glycosylase and subsequent DNA-ligase, repair by excision of nucleotides (NER) by endonucleases and then DNA-ligase replacements, and mismatch repair (MMR). RNA polymerases must be able to promptly and primarily focus on the most vital areas, in order to facilitate efficient recleaning. In other words, the load must not be excessive nor chronic in order not to create destructive DNA adducts, even at mitochondrial DNA level. Therefore, we can say that the genetic and genetic-polymorphic structure functions as a fluid genome in the interaction with the outside-of-us, in which ontogenesis is recapitulation, as well as a new reading of phylogenesis. For this reason, I have spoken elsewhere of systemic filo-onto-epigenetics (SFOE), now an indispensable reference for socio-health-environmental assessments, but also evidently political-economic, and of course individual, evaluations.

'Epigenetics is about how the genes we inherit from our parents are controlled, and how they interact with our environment, how our genes make us, well, us' (93). We are perpetually provisional, liquid assemblies: metagenomics conveys a continuous becoming in perennial dynamism. This results in contacts proving crucial in their outcomes; and although there is no linearity and predictability by definition, the

quality of the contacts can be salvific or fatal in relation to our ability to read and respond. Even the inert particulate defines variations on the germ and somatic line (94-95).

The preceding considerations justify the necessity of an immediate adoption of the logics of hyper complexity, interdisciplinarity, and the precautionary principle, in order to take the time to carefully analyze, in existential terms, the purposes of acts; to avoid being dazzled by the tools or misplacing them, due to their undoubted fascination, as objectives, as already happens in selective adolescent mutism and hikikomori, dramatic examples of distorted and pathogenic identification-dependence of life with téchne, and of the latter with science.

Let us remind ourselves, once again, what our microbiota is, in order to protect it, keep it in a position of symbiote commensal, and prevent it from becoming a pathobiont. Its function is not limited to the correct functioning of the digestive system, but extends to the prevention of asthma, hypertension, obesity, diabetes, dysphoric syndromes, and the entire complex of chronic and neurodegenerative diseases. The central nervous system, autonomic nervous system, and enteric nervous system (ENS) are connected through the informational function: inflammatory processes alter microbiome responses (96), among these inflammatory factors are environmental pollutants, including plastics, microplastics, radionuclides, nutritional aspects (nutrigenomics) and climate changes.

The gut-brain axis is directly linked to environmental contaminants, toxic substances, and nutritional and behavioral choices (such as nutrition and drug abuse, especially antibiotics). 'The main message is the gut microbiome is a key player in the spread of antibiotic resistance, and that medications other than antibiotics can change the structure of the gut microbiome and influence health in ways we weren't aware of before the current explosion in microbiome science' (97).

For example, a predominance of Faecalibacterium and Coprococcus is an indicator of eustress and quality of life, of lack of depression. If Prevotella is deficient at 12 months, perhaps due to an antibiotic treatment, it can elicit disturbances at 2 years of age; this future damage could be corrected if acted upon within one year. 'The mechanisms may include stimulation of the vagus nerve, release of cytokines or enzymes, tryptophan metabolism, interaction with the peripheral immune system' (98), and production of SCFAs (short-chain fatty acids). Disorders can presently be monitored via '16SrRNA gene sequencing', considering that genetic patterns are reset at each generation and differ from the mother cell. The benefits of the microbiome are granted by the inhibition of pathogen adhesion, their competitive exclusion, production of antimicrobial substances, and immunological modulation, which together determine organ protection. 'Organs with high tumour incidence in inflammatory settings are

often those that interact closely with microbial products or directly with microbiota, such as the intestine or lung' (98). The result is activation of the inflammasome, i.e., a low-grade inflammation with increased hsCRP (high-sensitivity protein C) and cytokines, primum movens for the development of cardiovascular disease, vascular disease (CAD Coronary Artery disease, CVD Cerebrovascular Disease, PAD Peripheral Artery Disease), cancer, heart failure, and atrial fibrillation on the drive of dyslipidemias and unhealthy diets. The intestinal microbiota produces specific metabolites affecting cardiovascular risk, such as serum levels of phenylacetylglutamine, trimethylamine oxide (TMAO), indole propionate (IPA). Incidentally, high levels of TMAO are related to meat diets, another reason to drastically reduce meat. A balanced microbiota has a decisive anti-inflammatory role tasked with preserving the microvascular endothelial function, as seen from RH-PAT (Reactive Hyperemia-Peripheral Arterial Tonometry); its dysfunction results in atherogenesis and the increase of solid tumors by production of ROS at endothelial level. Stress results in apoptosis and genotoxicity with DNA damage. The microvascular alteration undermines the removal of toxins and waste products, determining, specifically at the temporal lobes level and due to a particular vulnerability, suffering and oxygen reduction, possibly in association with an increased sympathetic stimulation with cognitive and memory processing enfeeblement. Hypoxia may stimulate angiogenesis, common cause of athero-carcinogenesis and phlogosis (IL1b, IL InterLeuchina). Lung dysbiosis may cause cancer (activation of the 'lung resident gammadelta cells' oncogene). Eubiosis can also attack the quota of infectious cancers (13%) (99 - 111). Eubiosis refers to a vast repertoire of mi
crobiota including the skin, primary protection and access filter, and the oral cavity. It is impressive that 100% of AD patients have Porphyromonas gingivalis (but also Fusobacterium nucleatum), periodontitis bacteria, which cause 'downstream inflammation' with to tau tangles and amyloid-beta (gingipain hypothesis). Such infection can overcome the microglia barrier. Oral dysbiotic microbiomes underlie periodontal diseases and cavities; moreover, 'oral disease contributes to the severity and progression of several systemic diseases, like rheumatoid arthritis, diabetes, cardiovascular disease, and Alzheimer's' (112). It is therefore necessary and feasible to contain infections by reducing proinflammatory cytokines, IL-beta, TNF-alpha (Tumor Necrosis Factor), IFN-gamma (Interpheron), IL-6 and IL-8. Eubiosis is also an underestimated social-health problem: in hospital infections, the patient's microbiome functions as a vessel for BSIs (bloodstream infections), as observable from the tracking of SNVs (Single Nucleotide Variants), which distinguishes bacterial species (StrainSifter) (113 - 116), thus posing the problem of pre-hospitalization triage. A high content of soluble and insoluble fibers allows a positive response to immunotherapy multiplied by

a factor of 5, as seen by 'whole metagenomic shotgun sequence data'. In conclusion, our balance is entrusted to the infinitesimally small that comes to us mostly externally; the microbiome is an extraordinary modulator of the gene expression of intestinal epithelial cells with effects on the host receptor availability, the metabolism of lithocholic and deoxycholic acid, and the glycosylation reactions; moreover, it produces antibiotics and bactericidins, as well as short chain fatty acids, SCFA (acetate, butyrate, propionate), presiding over the synthesis of vitamin K, B12, niacin, thiamine, riboflavin; it favors the action of alveolar macrophages. Thus, it becomes essential to protect ENS for neuroimmunoendocrine homeostasis: pollutants, both nutritional and non, alter the second measure firewall, the liver which protects, through MAIT (Mucosal-Associated Invariant T), and antigenic sensitive T cells in the case of inflammatory cytokines (IL-17 for example) and various antigens, via synthesis from microbial riboflavin. We can imagine GALT (Gut Associated Lymph Tissue), MALT (Mucosal Associated Lymph Tissue), IgA, the mucosal barrier, and the microbiota as components of the true immunological network (117-120). It is most useful to recall the multiple activation modalities of the brain-gut axis via biunivocal nerve, vasculature-lymphatic, humoral, and neurotransmission routes (GABA, 5HT, SCFA, n. X, proinflammatory cytokines…). A reminder that SCFAs are an energy source, essential in the morphology of the nervous system, inflammatory reduction, and the improvement of insulin sensitivity. This level of complexity ties our existence to life outside us: aerobic bacteria (e.g. yeasts) provide an oxygen-poor environment for photosynthetic ones, thus triggering the optimal function of the latter. For instance, the genus Rhodopseudomonas, also digester of aromatic bonds, is able, via nitrogenase, to transform nitrogen gas into ammonium. Yeasts themselves (e.g. saccharomyces cerevisiae) produce CO2 in an oxygen environment, while contributing to the transformation of sugars into alcohol in an anaerobic environment. As Lukens suggests, the microbiome in its mother-child relationship is strongly influenced by stress and diet; in addition, the metabolites produced can cause neurodevelopmental alteration (121).

4. Nutritional Quality

The genetic/polymorphic-epigenetic-microbiome network, therefore, represents the philo-ontogenetic substrate that characterizes nature and us; what has been given to us and what we contact and personally add to our experience through more or less conscious acts, which may facilitate or undermine our body-mind. Once again, context plays a decisive role: L. Feuerbach's statement 'We are what we eat', although in the perspective of a violently anti-idealistic materialism, photographs an incontrovertible reality; as explained by the philosopher, food represents the foundation of the cultural and sentimental process (122). A body which, in order to optimally func-

tion, must be supplied with macro-micronutrients of adequate quality and quantity: every function, every metabolic and reductive oxide mechanism, the characteristics of psycho-neuro-endocrine-immunological aspects (PNEI) depend for their optimal functioning on nutritional quality (123-124). This inevitably derives from the matrix one first, and from the productive-transformative one (think of ultra-processed foods making up 40% of consumed foods) secondly. Nature presents delicate self-regulating and autopoietic mechanisms (125 -126), managed, at the micro level, by non-mechanistic paradigms based on energy potentials, not representable by state variability; this structure illustrates a world in feverish becoming, not reducible to something linear nor mechanistic, for the variables are largely indeterminate within unmanageable fields of force, changing by systemic, rather than mechanical-linear, causality. It is the context, the combination of parts, that activates trends and potentialities, and the quality of the context that ensures integrity and the maintenance of good structural features, such as proteic ones, by avoiding prionizations and the presence of non-sense mutations at molecular level. Industrial agriculture, built on monoculture and mechanization, is based on yield per hectare; on the other hand, biological-biodynamic agriculture sums different crops whose overall value, always per hectare, even in quantitative terms, is decidedly higher. Overall, 'industrial agriculture accounts for 75% of the ecological destruction of biodiversity, land and water, and contributes to 50% of greenhouse-gas emissions, causing air pollution and climate chaos. Nearly 75% of chronic non-communicable diseases are food-related.' (127). It is thus unsurprising that the direct oncological incidence from nutrition amounts to 32%, perhaps due to the desertification induced on our microbiome, mycobiome, bacteriophage by the existence, at this level, of the shikimate pathway, which produces tryptophan, phenylalanine, and tyrosine in bacteria. Since the human body does not possess this route, it is vulnerable to pathologies, for our bacteria is directly affected by the damage caused by pesticides, herbicides, and fertilizers. One must remember that these amino acids are essential to produce dopamine, serotonin, adrenaline, melatonin, folates, vitamin E, and thyroid hormones. The dramatic increase in pathologies within the autistic spectrum and neurodegenerative phenomena is an eloquent indicator (128). Crucial is the necessity of the free association of nature in nature, to verify compatibilities, the only way to true food quality. Such is the case of the 'salvestrols' (129) which, in association with cyp1b1, build powerful anti-cancer apoptotic molecules; another instance is that of the distortive saga of GMOs, whose resounding failure is masked by disturbing interests proposing an opposite, delusional narrative of reality. Note that GMOs, without lingering into an ideological polemic, possess constructs (transfer units) characterized by extremely fragile bonds. Often, these constructs are viral with genes consisting of heterogeneous DNA in the construction of 'cassette', including

genes responsible for antibiotic resistance that inhabit the transgenic organism. Such instability causes the increase of horizontal transfer and recombination of DNA from plasmids, transposons, viruses, and bacteria. There is a paroxysmal amplification of the process of creating new bacteria and viruses, but also of the spread of antibiotic resistance via strengthened pathogens, resistance to phytopharmaceuticals, and matrix spread of transgenic DNA. Moreover, the manifest GMO hypofertility forces annual repurchasing of the same seeds, destined to monoculture-directed production, disregarding biodiversity; a situation heavily favoring seed companies. Relying on natural cycles that combine different levels of complexity to generate new compatible and stable evolutions is therefore wise, salvific, and above all healthy; especially once recognized natural cycles as infinitely more sophisticated and congruous than human intervention. This likely means focusing on food biodiversity, autochthonous clones or naturally hybridized ones for better adaptation, on the abundant introduction of soluble and insoluble fibers, and on heritage fruits, cereals and legumes, since bioengineering hybridization already involves a remarkable nutritional loss; this would allow returning to valorizing wild plants, extraordinarily rich in salvestrols (130), thus approaching the logic of controlling the seeds biopiracy, and allowing instead exchange and diffusion for the maximum variety throughout different agronomic areas, in order to facilitate their establishment and replication. Stressing the logic of mixed variety seeds for different areas to recover genetic strength and emphasize the replicative possibilities (131 - 134). All this in the containment-abolition of monoculture, intensive farming, and use of fossil fuel agricultural machinery now that switching to vehicles powered by renewable energy is, in fact, possible and convenient. In conclusion, eating better and less, especially when considering that the caloric restriction, activated via the SIR-1, AGE-1, and DAF-2 genes, increases the repairing capacities of the DNA (135) while respecting the environment and its ecosystems.

Discussion

To summarize, we should proceed cautiously, aiming at multi-interdisciplinarity, the recovery of the sense of community, and the drafting of medium-to-long-term predictive strategies based on present knowledge, which, although in process, already presents indisputable evidence. Among these, 1) the widespread environmental degradation, 2) increasing pollution of matrices and the absolute lack of a regenerative policy concerning them, 3) the impoverishment of a soil increasingly exposed to climate change and incompatible agro-industrial practices, which are worsening the abandonment of the fields and sanctioning the severe loss of income for monoculture practices, 4) the negative social-health consequences, 5) the loss of the good and the beautiful - not by chance etymologically connected.

The missing link in the explanatory logics of interconnection is provided by the combined disposition of genetics-polymorphisms, robustness-hardiness (136), and epigenetic-microbiota, the fluid-software genome. All framed in the logic of a systemic-contextual randomness, in which even the celebrated DNA, as Lewontin says, would only be a dead molecule without the protein-enzymatic action; as if to say that the self-replicating characteristic is attributed to the inducing complexity, including all the implications that follow (137).
In reality, the genome is unique for its ancestral adaptation properties and polyglot language; however, precisely because of its constantly evocable expressive-functional modification, it presupposes an environment modified according to rhythms of sufficiently natural interaction. More specifically, following the secure timing of natural complexity in order to avoid dramatic incompatibilities that would see our biological life, rather than nature, in danger. The accumulated epigenetic transgenerational appositions are an unequivocal sign of the interconnection within environmental space-time. However, this could place us, and not in an epistemological sense, in a particular nuance of the 'spandrel paper ' of the Gouldian vision of forced entrainment of cumulative dysfunctions: the paradox suggests that a poor management of us-outside of us could make us less reactive and adaptable compared to previous generations, thus invalidating the adaptive, rather than evolutionary, concept (138). Evolution is not synonymous of a possible improved world, but rather indicating superimposed-modifying stages that are not necessarily functionally augmentative, with trends that can aggravate biological vitality, up to its complete negation.
The Anthropocene illustrates an egotic and decontextualized man, characterized by unprecedented epistemic violence. Its infinite potential is darkened by a principle of fallacious and unscientific individuation, since the discovery of the microbiome proves our individual consciousness as supra-individual, hetero-induced and also dependent on natural-cultural context. A paradigm shift that redraws our boundaries, which, after the symbiosis of the maternal amniotic shell, should return us as members of the world in adulthood. Cast into the world no doubt but to rediscover our origin and responsibilities within the interconnection of a vital system, even if biologically closed. We require a great amount of knowledge to tackle hyper complexity, to recognize the nature-man interconnection, to marginalize the mechanistic culture of linear causality, to adhere to the capacity for doubt and for the abstract Heisenberg and Gödel have instilled, to understand the unthinkable beyond the sense-perceptive appearance. As exemplifications, we find synchronous and equipotential wave-particle coexistence in quantum physics, and microbiome and epigenetics in biology. 'The mechanical mind is a representative of capitalist patriarchy and an instrument of the colonizing empire. It is an efficient tool for exploitation and extraction, manipulation,

and control. On the other hand, it proves unsuitable for the maintenance, reinvigoration, nourishment and growth of life'…'Knowledge has a shared origin, then it is privatized, armed, made into information, reduced to data, reconsidered, and resold as intelligence. This tangible decay of knowledge in bytes of sellable disposable data (of which we are the source) has been propagated as innovation. The creation of the mechanical mind is based on constructing multiple separations out of unity. (127).
If the usable space is limited and based on interdependence, then our choices must be based on 'virtute e canoscenza', that is, on ethics and knowledge. The first 3 mentioned points of evidence require transnational urgent measures and the rapid acknowledgment of the available data by policy makers, with immediate decision-making, to a) convert into agro-ecology an agroindustry which has, so far, proved prevailing, energy-consuming, and responsible for the current dismantling of the matrix, especially referring to accelerated regenerations via 'effective micro-organisms' (EMs), b) introduce circular and virtuous economies, thus eliminating detrimental industrial and social policies based on predatory logics and the induction of aimless consumption, completely disregarding intelligence, human dignity, and the creatures we share a common destiny with , c) activate a vigorous plan of forestation, inclusive of the urban sector, d) better distribute global wealth presently concentrated at the top of the distribution pyramid (Davos 2020: The land of inequality). Industrialization and globalization of food systems, in addition to the advance of fast/junk food, are fueled by industrial food and chemical multinationals; the triggered process is leading to an epochal agricultural crisis, the erosion of biodiversity in agriculture, the increase in toxic substances in food, and the spread of diseases. The agrochemical industry and agribusiness, the junk food industry and the pharmaceutical industry are making great profits; in the meantime, nature, nations and populations are becoming increasingly weak and sick' (127). In this sense, the OD attempts to recreate the optimal conditions so that the process of natural inter-being of extraordinary complexity, also due to its incalculable actors, can deploy correctly according to the rules. Such sophisticated rules of nature, a Spinozian natura naturans to be rediscovered.
This means restoring territorial quality, sense of community synergism, building a sustainable future, correlating the territory to the sharing of total sustainability and matrix regeneration, activating a most encompassing collaboration and knowledge among producers and users, and collectively redesigning the landscape in a shared social process (eco districts), attributing to environmental integrity its undisputed role, currently ignored, of the foundation of fertility, life, and the sole possibility of survival. It is a matter of redesigning the relationships between town and country, territory and forestation, of establishing efficient relations between LAG (Local Action Group), area strategies such as those for Internal Areas, GOI (Operating

Groups for Innovation), the River Contracts…, but also with all the tourist and socio-economic-cultural and association realities that can implement the vision of a harmonious, healthy world built on beauty. The fourth point in the debate concerns the socio-health consequences of an oligarchic, financial-globalized system; aimed at immediate profit, it leaves no hope to future generations, excluding democratic shares and creating voracious profit paradigms. It is the case of post-democracy, defined as a pseudo-democratic presentation driven by the media and lobby. Hence the need to broaden the management of public matters by resorting to direct and participatory democracy, given the corruptive fragility of the representative one. Moreover, the OD must include the 8 salvific Rs opposing the predominant liberal-productivism: relocate, reduce, reuse, recycle, reevaluate, reconceptualize, restructure, redistribute (139 - 140). An afterthought, directed toward re-humanization and renaturalization, rather than adherence to clearly dystopian instances; as we know, the ecosphere is unavailable for dialog, we thus become responsible for understanding and building what Hans Jonas identified as the ethics of the future. The bacterial 'quorum sensing' represents the availability of walls for transmembrane communication receptors of semiochemicals whose correct density is a homeostasis factor with electron and photon exchange, that chromosomes and plasmids, various gene pieces, are in continuous horizontal and interregnum exchange. Forgetting about it, for instance, has launched antibiotic resistance (141-143), the deconstructing of the hypothalamus-pituitary-adrenal axis, and the explosion of chronic-metabolic-degenerative diseases with practically insoluble sociosanitary problems. The appalling inequality of access to care, underlined by social genomics (144), is a sign of the genetic-epigenetic-microbiome triad and of a politically insufficient analysis. Neurodevelopment is officially recognized at risk. Moreover, the spread of neurodegenerative diseases is proved to be affected by environmental and electromagnetic pollution, and the use and intake of pesticides, herbicides, and fertilizers. A threat to our existence via direct aggression through alteration of, for example, the serotonergic pathways and/or direct inflammatory action, as observable from the IL17 analysis.

The OD is necessary to eliminate chemistry, rebalance supply chains, focus on biodiversity, and ban fossil energies and intensive farming (145 - 148).

This constitutes an explicit invitation to change our habits, to direct ourselves toward choices that favor the regeneration of soils, the maintenance of water resources, the reduction of air pollution, the respect of archaic plants, rich in memory and defenses (130), to reduce calories, to reduce the consumption of animal fats and animals themselves. For our health and that of the planet (149-150). These choices become obligatory, for it is impossible to continue to anticipate the overshoot day, without paying a devastating price. Regarding the OD, the Mediterranean diet (MedDiet)

modulates the microbiome response, thus causing the deactivation of the inflammasome. In this sense, our ODs are situated in a privileged position, scientifically taking for granted the MedDiet as the healthiest. The last point concerning the territory is beauty: not only in esthetic terms but also as a developer of 'landscapes' of the soul, of processes of return to inner pacification, to ecstatic commotion; a human-nature relationship that refers to identity and insight instances. The landscape, in its historical, artistic heritage, in addition to the experience of our ancestors, symbolizes heritage, theater, nourishment, sacredness, well-being and induction of responsibility (151- 153).
Focusing on the 2021-2027 PAC speech, published in June 2018 (COM (2018) 392), two out of the nine listed objectives deserve a closer analysis. The first one encourages increased competitiveness, while the second promotes the protection of food health and quality. Food quality is not its quantity. Furthermore, the recurrent concept of 'safety' is not to be accepted if intended as the replicability of the genotype aimed at flattening the patented seed market. Such a term furtherly emphasizes semantic ambiguity and is contradictory if the objective is, as previously stated, biodiversity. Moreover, if referring to good health, as discussed above, the golden standard cannot be agro-industrial and intensive food farming, but only agro-ecological implementation and respect for all existing creatures; without forgetting that insects (154), besides constructing our proto brain (78), are important pollinators.

Conclusions

In conclusion, the OD proposes itself as in proximity to natural rhythms, promoting ethical practices within regenerative agriculture; moreover, it promotes the logic of maximum biodiversity by totalizing agriculture, forestry and livestock through reforestation and territorial remodeling. Such is the case of the required interventions for areas at hydrogeological risk, and for those polluted by phytopharmaceuticals and nitrates; in addition, there is also the indispensable, so far ignored, need to safeguard the installations for drinking-water use. The organic district should become the promoter and defender of the infinite local identities, in total respect for the environment. This entails taking over the most advanced knowledge of agroecology (no till farming, permaculture, construction of collaboration-interdependencies between producers, exchange of know-how, sharing of resources and biological seeds selected naturally for specific territorial adaptations, accelerated renunciation of fossil derivatives by adhesion to renewable energies), and keeping in contact with innovation networks, thus establishing advanced links of exchange and collaboration via the most progressive socio-cultural realities. It also involves entering the historical-artistic and tourist tissue of the society of belonging by reciprocal implementation, initiating dialogs with universities, public and private bodies, institutions, school canteens, and hospitals and RSA. Naturally, simple

consumers would also partake in this dialog via information-promotion, as the OD is the spearhead of a cultural evolutionary process, rather than a nutritional one. The field of cereals provides examples such as the recovery of ancient grains, as well as the potential of the bakery supply chain in historical-cultural and nutritional terms, reflecting on the historical-cultural-nutritional significance of the crops. International literature attributes to the organic-biodynamic not only the evidence of environmental protection which, as stated above, is unknown to agro-industry, but also clear nutritional superiority and maintenance of a state of health, presently essential for the unsurprising overload of chronic degenerative diseases, particularly costly for already troubled health services. It then becomes a matter of activating a real 'grass-roots revolution' which, according to community indications, encourages self-organization, identification of legal roles of broad representation, especially regarding administrative management to avoid blocking from setting up, and to better combine the OD with PSR in the State/Region and Community logics. The PAC, through EAFRD, has identified in the district the subject triggering a cultural and productive revolution. It is the first time that in top-down logics an explicit desire for environmental recovery starts from nutritional quality. This brings us to short supply chains, local markets (farmers' markets), and activation of transformation systems, in order to minimize intermediaries and build GDO-independent circuits at local, national and transnational levels. These require aggregation, multifunctionality of the farm in an effective and synergic collaboration with local associations and networks (AIAB, ICEA, INNER, DEMETER, City of Bio etc.).

The new PAC sufficiently captures the available scientific knowledge, though it highlights serious cultural gaps in the genetic-epigenetic-microbiome network (e.g. proposing a reduction rather than abolition of antibiotics and pesticides, demonstrating that the interests of multinationals come before the right to health). We must realize that we cannot stand in an onthology of the accidental, nor in our currently unavoidable destiny, for the latter is based on the state of necessity induced by operational inertia. However, when the EU document mentions the need for adaptation to climate change, improvement of soils, air quality, protection of water quality, management of nutrients, and sustainable use of water resources, it functions as a resounding endorsement to the OD's moral and value supremacy, taking a decisive leap forward in comparison, for example, to the 2007 legislation (155).

Hence ethics, knowledge of ecosystems, information, training, unbounded environmental protection, and rediscovery of the genius loci, which moreover builds our identity and determines our state of health, are necessary for a new beginning, closing the current gap through a technopolitical foresight that places in prevention the solution for what someone called the three debts of man: environmental, socio-economic, and cognitive (156).

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