ISSN: 0328-0446

Electroneurobiología *vol. 7 (2), pp. 81-116, 2000*

A Palindrome:

Conscious Living Creatures as Instruments of Nature;

Nature as an Instrument of Conscious Living Creatures

by

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Electroneurobiología vol. **7** (2), pp. 81-116, 2000:
URL *http://electroneubio.secyt.gov.ar/a_palindrome.htm*

Also chapter 12 in
Helmut Wautischer, ed., *Ontology of Consciousness: Percipient Action*
The MIT Press, Cambridge, Mass. (A Bradford Book), forthcoming
(References in this file have been brought up to the date of the The MIT Press edition)

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ABSTRACT: Conventional wisdom states that science cannot discover or describe any intrinsic, noninstrumental value. Research in a broader perspective indicates that this may be doubted. What goes on in the universe manifests itself to natural scientists as an axiological palindrome, readable from more than a single vantage point. If, through observation of reality, one comes to recognize that mind-possessing living creatures – whether human or of some other species – were used as a means, that is to say functionalized, by physical processes, namely by biospheric evolution and its larger context, then one must also recognize that the astrophysical-

biospheric evolution was in turn functionalized or used as a means to afford responsibility to some mind-possessing living creatures. Natural science thus observes a mirror or reciprocal functionalization, in which each of both realities uses for its own ends the reality that uses it as a means. Current science, however, does not stop at this result. Also in natural science's grandest picture of reality, the being of all entities cannot ultimately come from other entities' being and should, thus, come from value: regardless of what it is that the being of entities originate from, it is to be regarded as taking action in view of value.

Natural science describes originated realities of two kinds: observers, also called minds, which do not generate time inside them (but may emulate any outer course, an aptitude that may be called xenochronism), and the set of extramentalities, which does it (and interactively assists minds to emulate outer evolutions). While in minds memories persist because they do not exist within a coursing of time that could alter or erase them, extramentalities evolve because the transfers of causal efficiency make a microphysical time course that the inertial mass of some but not all elementary particles extends into sizeable scales. As long as xenochronic minds and time-evolving extramentalities interact, they keep the mentioned palindromic relationship. Sooner or later, however, bodily circumstances break down, rendering their minds unobservable for natural science (death). So science can track minds only until they pass away. Yet observations previous to death, especially that of memories' being unable to succumb to time processes, enable science to say that in this state of affairs – that is, beyond such a realm of causal-efficiency transfers observed by natural science – the mentioned palindromic relationship is also to break down, and the antecedent matter of value resurfaces. This cessation reveals which of both courses of the mentioned palindrome the originating value does in the end invest.

This occurs because in nature minds and extramentalities enact a unique efficient causality but, in making time courses, this causality's ability to cause further changes becomes extinguished when it affects minds, intonating them into knowable differentiations. Or, minds are not only sources but also sinks of causal efficiency: sensory knowledge – that is, minds' sense-based differentiations or knowable mental contents – consists of efficient causality that has lost its transferability and become no longer able to cause further changes. On the contrary, the minds' purposively directed causal efficiency that minds put to work in the causation-transferring realm cannot be likewise extinguished or exhausted therein. This disparity, in the state of affairs beyond what in the universe goes on through causal transfers, breaks down the mentioned palindromic situation kept in nature. Science can say that at death the mind could not succumb but extramental nature ceases being of assistance. Science's grand picture of reality thereby recognizes that the ontological makeup of the mind of every observer-endowed living organism is where the intrinsic value resides whereby both minds and extramentalities exist. The ontological makeup of the situations arranged by transferable

causal efficiency – that is, the time course of extramentalities – just serves to enable genuine freedom in some minds, whose development would be obfuscated should they come directly to grips with the unoriginated portion of reality rather than discoverable regularities. In science's grand picture of reality, therefore, natural scientists' aspiration of "naturalizing the minds' depiction" does not clash with the humanities' recognition of intrinsic value in persons.

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1. Putting Minds to Work in Nature, Or, Life's Natural Sense

Bodies. Any flow of energy may arrange things. In certain cases it may give shape to biological bodies. For example, the hot interior of many planets creates a heat flow toward the surface. This outgoing flow might sustain organic arrangements reproducing underground – that is, microbial life – and the flow of solar radiation across thick clouds, such as those of Venus, might develop communities of floating microorganisms. Over the Earth's surface, that is to say neither on high clouds nor very far underground, the energy flow that sustains biospheric differentiations – *life* – is primarily made by the Sun's radiation that reaches our planet and then gets reflected from the outermost level of the land or sea. The best-known living organisms flourish as a means to dull in the most efficient way the shine reflected by their land or aquatic environment.

This shine-dulling means of making organisms operates constrained by chemical kinetics and uses of cell space (compartmentalization). These two nonthermodynamic constraints play a major part in shaping the evolutionary drive, though fortunately it is unnecessary to consider them in the present discussion. In more opaque technical words, we can start it by saying that *biospheric differentiation optimizes the disordering of planetary albedo on the shortest path.* The evolutionary diversification, of the balanced system of living beings and surroundings – or biosphere – into nested organizations, apportions the planet's exiting energy (albedo, the glare that the planet sheds into space) *as fast as it can* into photons (the light waves, or "grains of light" forming that glare) in their greatest physically feasible numbers with the longest (dubbed "reddest") physically feasible wavelength. Life dims the planet's glare. This is why the diversity of living beings has grown continuously through evolutionary times – bringing about the natural selection of brains and of their opportune production of different sensations and sentiments in the subjective existences, or finite psyches, that find themselves in those brains.

The shine reflected from our planet when seen from afar, as a tiny point of light in the sky, is what we see on the planet itself as daylight. Bio-

logical evolution is a relaxation or balance-seeking elastic process that, in the Earth's biosphere at least, mainly uses and affects daylight. It is similar to the self-shaping of a bow that relaxes as it shoots its arrow, exhausting as fast as it can its own capacity of doing further physical work. By modifying the effulgence, or shining, of the planet where this relaxation process takes place, biological evolution moves like a shooting bow, toward exhausting by the shortest path its own capacity to do further physical work. Just as the bow supports the arrow's shot but by itself does not direct it, so also the evolutionary trajectory is set by the nonthermodynamic factors over whose discussion I am skipping, such as replicative kinetics and its space and time compartmentalization. In these terms, this glare-dwindling disordering is the motor – not a directing but a supporting one – that drives biological evolution. It is instrumental not in directing but rather in supporting the evolution of certain replicating organizations of chemical reactions. The averaging-out of the work-doing highs and lows, or differences in photons' energies, comes to pass along the trophic or alimentary chains of organisms catching living prey one after another – like bigger fish eating smaller ones.

It happens in the series of food hunts whose paths commonly converge onto photosynthetic plants, which currently are the initial link and ultimate prey in most of the Earth's biospheric system. All along these chains, the more energetic photons in a certain range become absorbed in chemical reactions that later engender new photons, most of them fainter. So, how is this optimal disordering of the photons' capacity to perform work, or tarnishing the planet's shine, achieved? By using predecessors of the exiting photons to produce heat and excrement as they pass through the alimentary chains.

Minds. This introduces variety into biospheric history: heat (for the most part, directly ending as unseen infrared radiation fed into and dimming the planetary glare, by its replacing some of the shine that otherwise should have been reflected immediately) and digestion's excrement (a transient state of biomatter that eases its further decomposition) are the crucial upshot of this evolution, the arrow shot by this tensed arch – and the sense of all life in nature. Minds are means to attain more of it faster. To diminish (a little), in this way, the working aptitude of the planetary albedo or effulgence, this process functionalizes (or uses as a means) the regular appearings (eclosions, or "pops-outs") of finite existentialities (or subjective existences, or psyches) for overcoming the limitations of Turing machines, unable to convert accidents into opportunities. Minds, however, can do this – that is, progress toward biological goals through appropriate steps for which the instructions are nonetheless undefinable – and this is why during the course of evolution minds become selected as instruments for some organisms to thrive in complex environments and situations demanding this capability.

Put in the service of this relaxing tension or elastic natural process, these instruments, finite existentialities also termed minds or psyches, are causal agencies: sinks and sources of causal action, as we will see. Thus, like any other source of change in nature, finite existentialities or minds act locally, and exist only "intransformatively" or within the actuality of the physical instant. This leaves outside of minds' reality (or minds' ontic consistency) the situations, unfolding in a stream of nows, whose tension-degrading evolution I have been recounting thus far. These situations transform themselves independently of their being known, that is, in extramentality, outside and apart of what finite minds are cognizant of; and thus such tension-degrading situational evolution is counted as elapsing time. All this concerns the carrying out of causal transformations and will be explained below. What counts here (and biologically, too) are two features that only minds make available for time processes.

These minds, put in this way to work as instruments in the service of this natural process, *know*: minds avail themselves of a gnoseological or cognoscitive grasp, *only* of the variations in their own ontic consistency – where time does not elapse, so that those variations's sequence does not fade and may be made to refer to otherwise gone extramental time courses ("past"). This means that their knowledge of their own ontic consistency is only partial. This incompleteness comes from their being limited or finite entities, so that they do not enact by themselves their own existence and consequently cannot know their own enactment to be rather than not to be, a prime ontological topic. Nonetheless, the knowledge of their variations suffices to build a model of the surroundings and of themselves within, provided such variations somehow come to reflect those realities. Furthermore, minds are endowed with semovience – or capacity to launch nonregular modifications in reality by taking unprompted initiatives – to efficiently cause changes *only* in the said variations in the texture of their own ontic consistency.

Both this gnoseological apprehension or knowing grasp and this semovience, which very remarkably coincide in their limited sphere of action, are in turn causally chained into respectively sensing and semoviently controlling the transformations that *only* a certain portion of extramental nature undergoes in time. Such parcel or portion is denominated the immediate circumstance of a circumstanced mind: the immediate localization of this mind's interactions or operative presence. This causally chained parcel or portion of nature is small, being a part (some brain components) of an organic body transiently conglomerated and persisting over a noticeable interval in a certain site and epoch – along a cradle-to-coffin itinerary or "world-line." The relationship, of this parcel of extramental nature with the grasp and semovience that are concurrent in, respectively, sensing and controlling only it, is called the "brain-mind connection." Its central feature is that, although efficient causation is unique throughout brain and mind, neither the parcel of extramentality nor the mind can in each case determine their mu-

tual allocation ("circumstancing"): such and such a brain for such and such a mind, and vice versa.

Whence it is said that the mind "ecloses" (or "pops out") at the causally chained parcel or portion of nature; not that it "emerges in" or "is produced by" the parcel's conglomeration. This bursting-out of eclosional realities, psyches or *individual finite existentialities*, is implemented or used to fulfill an operative function in the albedo-dimming, shortest-path relaxation process of extramental biospheric evolution. Which function is this one? It is the foremost among the so-called "functions of relation with the environment," or functions of relation for short. All biological organizations must cope with basic issues such as how to nourish, defend, and reproduce, so as to live on and thus fulfill their astrophysical-biological role of boosting entropy. For nourishing, defending and reproducing themselves most biological organizations function as Turing machines, which are the contrivances that cast step by step their outcomes' string. For example, corals, oysters, and tropical plants – all of which are not mind-regulated living creatures – function in this way. These biological organizations solve their problems upon *species-specific preadaptations*. All their functions of relation are preset. So, oysters solve these problems of how to nourish, defend, and reproduce by basing their particular solutions on species-specific preadaptations, instead of minding of the situations they should cope with. Refining, in contrast, the adaptation or adequacy of the provided solutions, in the biological organisms called "mind-regulated animals" – which use a mind as its uppermost regulatory level – the *individual finite existentiality* that confronts a concrete problem does this, and grasps at most of the opportunities that a Turing machine would have lost.

Thus the weirdest things in cosmology, these circumstanced existentialities, subjective existences, minds or psyches unbarterably allocated to constitute strange units with flowing parcels of extramentality – brains – and at whose emplacement the efficiency of some causal series exhausts itself (ending as sensory knowledges of the therein-interacting mind, not of any other one), are put in this evolutionary role because of the said two features that only minds make available for biological evolution. As sources of efficient causality, they can efficaciously inaugurate new causal series in their extramental surroundings, triggering diverse consequences. As sinks of efficient causality, they also know or gnoseologically grasp states of their own ontic consistency and their variations, produced by the exhaustion of efficient causal series into known reactions. These reactions' intonative variants or possible variations that inescapably must be known, when causally affected by the action packets of other causal agencies, are known as sensations; the demarcations' sequence of these reactions does not elapse (because of lack of causal-efficiency's transferability that could set up a time course for the mind's inner differentiations) and so the contents of experience remain rememberable.

Bodies Selected so as to Allow Intellectual Development of the Minds That Will Command Them. Minds are, thus, sinks of causally efficient actions. The evolutionary selection set up the diversity of the sensation-stirring organic processes congruously with the diversity of possible intonations; not reversely, as assumed in J. Müller's "law of specific energies." Thus, while conforming the selected organic processes to these possibilities of the minds' ontic consistency, the evolutionary employment or functionalization of these circumstanced existentialities only required adjusting the organic presentation of sensations to prompt existentialities' semovience into adaptive behavior – rather than into indulgent pursuances unavailing to the relaxation of their biosphere. For this adaptive function, step by step, the architectures of the cerebral gray became naturally selected as a necessary instrument, or requisite condition, for the developmental acquisition of suitable intellectual proficiency in the circumstanced existentialities.

Besides reacting self-intonatively when causally affected by action packets coming through the sensed parcel of nature (which is the immediate or causally interacting portion of their bodily circumstance), these finite existentialities continually initiate semovient actions. Minds are therefore sources of causally efficient actions. Some of these actions initiate evident bodily behavior, such as changing a limb's position. Others just change brain states. Others do not even stir such cerebral changes (as when making one's mind for selecting a particular memory in order to reimagine it, putting it in the general view also called "tip of the tongue"; or when giving up the attempts to reimagine it). But all these actions generate an attentional refocusing in the agent. Through those actions that are carried out bodily, finite existentialities probe their environment, by moving, cracking, or in any way changing the surrounding things. These initiatives allow their intellectual development, which could not be achieved through Platonic contemplation but needs to distinguish between their own causality and the resistances and performances of the surrounding things that thereby become typified and recognized as instancing a type ("concept"). The finite existentialities' gnoseological grasp (or cognizance), of the reactions stirred in them by these probed portions of the environment through any consistent causal chain impinging from outside on these existentialities' immediate circumstances, allows such circumstanced existentialities to build, in their own ontic consistency – which is known in its variations – a xenochronic or time-emulating model that tracks accurately enough some variations of the surrounding relevancies.

In this way, all that every existentiality does by herself in nature, whether initiating or not evident bodily behavior, is reclustering her focus of attention. Aboutness, the attentionally optional reference to certain responsively varying entities rather than to others, is thus intrinsic to the functioning, development, and use of that relevancies-anchored model. Their cognizance of themselves, although incomplete, allows these existentialities to know this model and then, as they grow up, to refine it. So they distinguish

a diversity of encompassing things in terms of which specific combination, of semovient actions, in similar circumstances maps again those outer things (or "conserves" them, as in Piagetian object permanence) in the mind's unelapsing ontic consistency.

This feature-ascertaining "classification" yields "classes" of encounters, relating each new individual encounter with the already objectified and categorized surrounding things. This turns new sensations into perceptions, turning sentient intelligences into percipient agencies. Let me give some illustrations. The largest thing in the solar system, Jupiter's magnetosphere (ten times the width of the sun), was only recognized in quite recent times and by means of actions performed by instruments journeying to the thing, unseen when one simply gazes at Jupiter. It instances a class (or "concept") whose previously encountered samples were smaller. Nut kernels, instead, are more straightforwardly recognized, as what appears *whenever* cracking open an instance of the appropriate class of woody shells. Yet in both cases the notion is established by the appropriate courses of semovient causal actions ("nut cracking" and "Jupiter probe-sending") and the sensual intonations that these actions generate in return; Platonic contemplation does not infuse knowledge. Along these lines, to achieve the mentioned transference of the problem-solving function from one agency to another (that is, from species-specific preadaptations, such as those of oysters, to individual finite existentialities circumstanced in individual organisms), these finite existentialities or minds are either sensually allured or sensually discouraged for keeping or varying their courses of semovient action on recognized things. In this way these existentialities are instigated to turn accidental encounters into opportunities for their general programmings set up in terms of seducing or deterring sensational states – for example, to optimally profit from occasions to nourish, reproduce, and protect themselves as well as kith and kin. Thus their semovience and their ontic intonability, the two gnoseologically apprehended, are used as an instrument to bring extra entropic gain to the biospheric process – an extra "reddening" to further dim the otherwise-silvery planetary shine.

So evolution selects the formation of animal bodies that allow minds to attain adaptive intellectual development, that is, to become clever as the individual grows up; not unrestrictedly clever, but just as much as is required for proficiently leading such bodies, in their specific circumstances, into their functions of relation. That is to say, evolution selects the formation of such animal bodies that make these minds know and semoviently address those differentiations of their own reality that may be developmentally made to include references to those outer things biologically relevant in their specific situation. (In contrast, recognizing objects such as Jupiter's magnetosphere was biologically unimportant for our ancestors, or for the ancestors of whales and dolphins, which acquired their own important increment in brain mass, in proportion to body weight, before our ancestors did: cetaceans acquired it some 35 million years ago.) This correspondence

thus represents outer things by way of individual segments intonatively broken off from the main reality knowing itself – that is, mind's ontology.

Such diversely and distinctly intonated segments, which are phenomenal as in a successively transforming field of adjoining phosphenes and non-intonated or nonphenomenal as in the operations one may carry out on them, "uncompact" each mind's knowledge of its own reality into differentiable contents. Through them, therefore, minds intend or image macroscopic or *molar* (extensive) realities. Contrastingly, extramental causation is enacted only through very minute, microphysical or subatomical packets of physical action (force carriers or quanta): an action that physics describes as belonging to physical fields and originating in them.

Insertion of Minds' Actions and Reactions into Time Courses. For that reason, the insertion of the actions and reactions of circumstanced minds into extramental causal chains (principally, into the biosphere's trophic chains) demands that these molarities-intending minds be circumstanced to immediately control field actions. The immediate extramentality of minds is thus a physical field, not the field's action-carrying microphysical packets. In other words, the specific locus for the causal efficacy of molar volition is thus the states of a certain physical field that makes eclose (as all fields do) microphysical carriers of its causal action. These carriers' density builds up this field's potential – coupled with the brain's electromagnetic one. As the gateway element for mind-brain efficiently causal interactions, modifications in the states of the first field that generate its potential (flow densities of its eclosing field-action carriers) generate sensory reactions in the circumstanced mind and are also under this mind's direct control. This preserves the molar mode of mind's efficient causation in the face of the neurobiophysical non-molar (microphysical) one, handled by such a field's force-carrier's eclosions. It permits extramentalities to be causally mapped and acted on from minds, and vice versa, not withstanding the scale jump of their vastly different modes (one in large units, the other in microphysical ones) of applying efficient causality.

Thus, by employing a dependable regularity in the eclosions of such minds as the resource to transfer concrete problem-solving from species-specific preadaptations to individual organisms, this shortest-path relaxation process for maximizing entropy becomes, through evolution, capable of raising its own efficiency even more. By implanting at the tip of the trophic chains more replacements of force carriers (more hunters in the chain), readily posited to dissipate the energy-richest preceding organic assemblages (feeding on them, turning them to heat and excrement), this shortest-path relaxation strategically elongates the trophic chains that the force carriers will traverse. Such a life of minds is thus not a vain struggle, a treadmill of useless toil. Minds are put to work as instruments for increasing entropy faster. Ordering the disordering process (like the act of controlling with barriers the flow of people going out of a crowded stadium, or intelli-

gently obstructing with traffic lights the vehicle circulation in big cities), the biospheric implant of those lives further orders and so speeds up the biosphere's disordering net action. Its shortest path is thereby approached further. Natural selection of biological organisms operates as a lever to multiply energy dissipation under the mentioned nonthermodynamic constraints: technically said, elongating trophic chains shortens the space-time path of their dissipative work. The evolutionary development consists in adapting each mind's intrinsic capacity of handling her intramental contents, so as to use the effects on her causally immediate circumstance for setting off a causal chain that inserts mind's action into some extramental processes. This extramental insertion of the actions of minds – percipient agencies, such sinks and sources of causal efficiency – is made to work in two kinds of improgrammable-in-detail crucial acts of becoming "one flesh," in which acts minds intelligently pursue two sensoemotional rewards:

- Eating up, *appropriating*, as bodily resources, the irregularly evasive bodies (preys that are hard to get hold of) and the results of former organized efforts (those prey's energy investments in their own buildup) of other circumstanced existentialities. This additional level of predation was attained by stirring private sensations (*e.g.*, hungers) that allure, into chasing after such a mind-regulated food, all the individuals recently deprived of nutrients (and thus "hungry" or "famished"), so as to self-sustain the evolutionary efficiency booster by correcting their nutritional depletion.

- Making most individuals *seek* the behavior in which complementary sex congeners masturbate inside vaginas and, on estrus, enwrapping the ejaculator ducts, or – if their species have not evolved fully interpenetrating anatomies – simply rub cloacæ, interlocking on diverse degrees. All of these matching sensoemotional responses, behaviors, and far-from-uniform organs were gradually selected, over a few hundred million years, starting with the coordination of both sexes' reflex expulsion of germ cells in great numbers, to become mixed and fecundated in water. By procuring upon its alluring sensations the execution, in the convenient bodily posture, of a sneeze-related, unconditioned expulsion reflex, this behavior leads to recombine halves of genetic material separately split in different individuals – a genome-reshuffling recombination attained, again, by way of stirring private sensations (incalescence) that in the two genders alike allure the individuals which of late have not participated at inseminations (thus erotized – that is, turned "incalescent" or "lustful"), so as to self-sustain the evolutionary efficiency-booster by amending their genome-recombinative ("copulative") lack of participation.

1.1. Origin and Evolution of Nervous Systems

At this point, the evolutionary origin of the nervous systems should be briefly reviewed, with special focus on the physical means put at play at each stage. The evolution of living systems, outlined hitherto, is one of the

most notable dynamical phenomena in nature. Numerous observations, often scarcely discussed outside of the neurobiological and psychophysiological concerns, consistently point out that speed variations in the action carriers of a force field, obtained by coupling with intensity variations of another, overlapping force field, found a neurobiophysical application. In it also intervened relativistic dilations of the instant or minimal interval-like course of causal transformation, despite such dilations being unexpected in the Pythagorean-Parmenidean mindsets where, in order to deny genuine reality to elapsing time, the physical instant is supposed infinitesimal – that is, "not integrable into actual time courses" – and therefore unfit to undergo relativistic dilations. Brains combine the two physical phenomena (fields' coupling, and instant's dilations from the relativistic speed variations so attained) in connecting minds with their environment and varying their sensations' force of imposition. This application, not specifically discussed in this subsection aimed instead at its antecedent stages (see rather Szirko's article, "Effects of relativistic motions in the brain and their physiological relevance"), was achieved through the electric field's neurophysiological patterning which, before and after the incorporation of those phenomena into biological functions, some living organisms employed for getting into resourceful relationship with outer events. Whence summarily depicting the long evolutionary roots of this special use clarifies such incorporation.

To obtain nourishment, defense, and genome recombination biological organisms enact their distinctive menus of relationships with the external world by performing what is called their "functions of relation." Distinguishing any particular external thing or sector to be acted or reacted on (object) from the rest of the environment, while allowing for its relevant relations with this environment (mapping), is termed a "reference to object." It was once thought that, for the functions of relation to make reference to objects and map them, a nervous system was requisite.

Nervous systems, for that reason, were conceived as having started with cellular specialization – that is, with the evolutionary selection of surface cells specialized in detecting and cooperatively communicating the presence of relevant objects to other bodily cells specialized in fittingly dealing with them. Though functional, this criterion underscored the primacy of anatomical distinctions: the nervous systems were assumed to have started with the functional diversity that made neurosensory cells different from other cells – especially from motor cells.

The rest of the evolution of the nervous systems was thought to have consisted in the natural selection, differentiation, and combination of the paths or circuits (hodologies, also called neural nets) composed of those specialized cells of the first class (neurosensory cells). The account tells that, early on, some of these communicating outer cells moved into the tissue (subepithelization) for covering. Then, for mustering into synergy more numerous and distant motor cells (muscles), they also became elongated into fibers (fibrillarization). Then the fibers became drawn together into

suitable anatomical corners, forming local networks called nerve plexuses (plexusification). Concentration continued: because it enables shortening in strategic sites the fibers' length and, so, faster coordinating the nerve communications that must be forwarded in some mutually referred-to sequence for bringing diverse muscles into common action, the natural selection of more complex instinctive behavior selected the genetic formation of nervous ganglia (ganglionarization). Their development came upon a treasure of new resources derived from variations in their inner connectivity. As ganglia became more complex, they formed an inner fiber mesh called neuropil (neuropilarization), which was organized into the brain cortex (corticalization) and – since the appearance of reptilomorphs - into neocortex (neocorticalization) so as to sustain, inside it, the natural selection of physical processes that minds can react to with subjective intonations.

Otherwise stated, it was thought that the natural selection of paths for nerve activity supplied the physical processes to which minds can react by intonating themselves subjectively. But such story is incorrect.

Already in the acellular microorganisms from which all animals derive, far before any cell differentiation, the functions of relation (which in Christfried Jakob's terms are in such beasts no more than *plasmopsiquismos*, plasmopsychisms, regarding "psychism" in the sense of Aristotle's concept of *soul*, *i.e*. not essentially including existentiality) made reference to objects. These acellulars distinguished from the rest of a mapped environment the particular thing or sector to be acted or reacted on (a field that, with the occasion of the fortieth anniversary of some key concepts, the present author reviewed: Crocco 2004 a). Almost two thousand million years ago, "swimming" was achieved by some Paleoproterozoic protozoans through the beating of cilia in their surface. It propelled the protozoan. Immediately below its surface spread oscillations in electrical (ionic) potential that reflected the viscous coordination of the cilia's beating. But coordination is not control and control was needed to catch the prey – often to chase it. So the very outer objects, whether edible or to be avoided, were allowed to intervene in the control that steered the so attained "swimming," specifying – by their also viscous contact with the beating ciliary system – an interference structure of potential (*i.e*. a sort of correlogram or outside-originated wave pattern encroaching on inner wave patterns so as to form briefly stationary transiences serving to refer to the interfering outer object). This interference generated inner objects of allusion ("stationary waves" in Jakob's 1906 terms: Jakob 1900, 1907-1909, 1911a, 1911b, 1913, 1918; Jakob and Onelli 1913, especially 25-40 and 75-102) that directed the "swimming" toward or away from the encountered object outside – with which the organism had thus established a relation.

Ciliophora, in this way, for over more than a thousand million years have fed because the mechanism that controls cilia reorients them or their water currents toward prey, some fast swimming such as paramecia, and edible floating crumbs. As the means for attaining reference to objects, in

the last phase of capture they utilized electric field patterns probably composed at the deformation of the distribution of submembrane potential fluctuations – resulting from the automatically coordinated ciliary beating – by the viscous contact of the ciliary rows with a floating piece or with the hydrostatic waves coming from also ciliated prey "swimming" fast in the neighborhoods. This electropotential system for ciliary control was retained in the descendents (some of whose body plans might for a time have been mounted on a hydroskeleton, as in today's earthworms) that in their larval stages ("dipleurula": *cf*. Garstang 1894, 1928; Nielsen 1999, 2005) had the cilia around the "mouth" (the ciliary band and the apical organ). From the cells supporting those cilia, our whole nervous system originates. A refinement of their control is exposed in adult ctenophores, gelatinous marine invertebrates that are voracious predators in zooplankton food chains and the largest organisms to swim by means of cilia. The refinement, captured in such a primitive level of organization, consists in that some of their cilia are controlled through axons; beautiful photographs have been published in Tamm and Tamm 2002. But ctenophores are derived from a separate evolutionary branch, other than that of humans and all vertebrates. In our nervous system we still retain not only the cilia but also gene sequences such as the one called *onecut* (Poustka *et al*. 2004; *cf*. Nakajima *et al*. 2004), which anatomically initiate the nervous system "above" what is to become the buccal cavity in our early embryos.

The electric field patterns (correlograms) that those acellulars utilized as the means for attaining reference to objects was lost in many animal lineages, which rather formed nervous ganglia to serve as their uppermost level of organic regulation. It was not the finest option but it evolved quickly, and precluding other possible alternatives it enabled many organisms to cope with certain life-sustaining exigencies; namely, with exigencies so undemanding that they would have been surmountable as well by a Turing machine, in spite of its limitations – that is, surmountable with a behavior generated by a set of instructions handicapped by two main drawbacks: their need of being definable by the antecedent situation, and their being able to evolve only over generations, not improving after individual maturity. This ganglionary uppermost level of organic regulation yielded the behavioral marvels we admire in, for example, bees, spiders, termites, and ants. The electric field means, lost in them, were instead preserved as the uppermost level of organic regulation during the process of path concentration that formed brains.

As a result, the brain organs that now carry out the chordate's uppermost level of organic regulation include neural ganglia that subserve a specific, connectivity-based function, which is not the uppermost regulatory function of the organism: the neural ganglia embedded in each chordate brain do hodologically enact unmindful behavior through refined sensomotor archs that lack any memory of particular objects. This is why so much of the brain's neuroactivity, being unassociated with sensable processes, is not

sensed at all: we are not aware of most of what our brain does. As another result of the same course of events brains also include the said electric field means. They perform another specific function. These electric means furnish the therein circumstanced mind with exchanges to intonatively react to, as well as with a way of bringing about ecphoria – that is, causally chaining some extramental processes to mental operations. Further, these same electric field means, by way of making relativistic effects assume specific values at the locations of the mind-extramentality causal exchanges, enact variations in time resolution that modulate the mind's intonative reactions, while the mind's retentiveness (or, rather, lack of a causal transfer-implemented, inner time course) supplies a memory of particular objects in terms of their operative characterization. Therewith individual intellectual developments become allowed in the biosphere – whereupon the regular eclosions of never regular minds are placed into the causal organization of behaving organisms, as their uppermost regulatory level. In this way, and not through the hodologies or circuitry of the neural ganglia embedded in the brain, these organisms become able to surmount the Turing machine limits and so colonize such biological niches where transforming accidents into opportunities is requisite for survival. Amniote organization, by its affording neocorticalization, provided the most recent major step in this evolutionary journey. We enjoy its benefits: our minds' intellectual development is based on the differentiation of mental contents attained in this way. Yet the architecture of these mental contents is by no means minds' most remarkable feature.

2. Minds' Cadacualtic Features

The most outstanding feature of these minds is rather one that culture often eclipsed, namely every mind's cadacualtez. Cadacualtez – that is, the intrinsic singularity, unbarterability, unrepeatability, and incommunicability of every existential being (independent of its being finite or not) – has remained unperceived in many cultures, as if hidden from view. Social stratification and its reflection in the resources of the language often privileged the allusions in block, the "mass nouns" in some East Asian languages and the "*De individuum scientia non datur*" ("about individuals no science is given") in the presuppositions of Western science. These structural constraints also have functional roots. In humans, as well as in every animal regulated by a circumstanced existentiality, typification or conceptual generalization is the foundation and necessary condition of utilitarian praxis – be it nutcracking or sending probes to the outer planets. Because of this, in every culture such a conceptual generalization grounded intelligibility on the references to those realities whose "individual instances" might be freely swapped, one in the place of another and any one by any one else, so that their total set would make a kind of fungible mass, from which it is equiva-

lent to take a portion or rather any other portion in order to "instantiate" such a mass. With this "samples" way of making allusion, individuality became an intersection of fungible attributes and the references to cadacualtez become eclipsed. Conceptual elements of this variety are characteristic of the line of thought that finds its continuity along intellectual stances such as those of Pythagoras, Parmenides, Plato, and British Puritanism and Platonism. Some of these conceptual elements have prevailed in the scientific way of making reference to the realities found in nature, preventing an emphasis on, or at times a perception of, the mentioned intrinsic unbarterability of existentialities. In other cases the notional developments of monotheistic faiths obscured it and, as outlined below, made its conceptual elaboration superfluous, contributing to the same result.

Minds' intrinsic unbarterability is thus a feature whose conceptualization is culturally eclipsed, as may be seen even in the communicative metaphor chosen by the unknown writer of the Book of Job's conclusion, whose author assumed natural in his readers's mindset the substitutability of some persons for others fulfilling their same role. In ancient times, in fact, no word was available to denote cadacualtez – even the term that originated our word *person* appeared relatively late – and the recognition of cadacualtez was often reduced to a preconceptual understanding of "*lo que se cifra en el nombre*" ("what is ciphered, or encoded, in the name"). It was manifested as an inexpressible intuition indicated by every forename, helped by place-names or family names wherever forenames seemed insufficiently clear – for example, to distinguish absent Gilles of Rome from absent Gilles of Lessines. Yet the eclipsing also affected the conceptual fathoming of somatopsychical or body-mind relationships.

Such a line of culturally dominant thinking abstracted and subtracted from the concept of every psyche the element of its unbarterable existentiality, representing every mind as consisting only of its mental contents: a hypothetical mind that happened to differentiate the same mental contents as another, would be deemed *to be* the latter. This confusion of the mind's presence within reality and her mental contents' structure, viewing the being or enaction of a cadacualtez – which makes an existentiality to exist – as exhausted in the arrangement of features later acquired by the already existing existentiality (rather than by another), made Locke's view, of body-mind relationships as exclusively consisting of efficient causality, appear "logical" and natural. Just as a domestic appliance that might remain connected or disconnected with the mains, and if plugged in might remain so in a certain wall plug or, indifferently, in any other whatsoever, such a brain-mind or body-mind relationship was also considered to exist only as long as it was working (*e.g*. while originating mental contents or bodily motions) and the connection was assumed to be Platonically accidental – that is, an extrinsic harnessing together, as if empsycheable bodies and embody-able minds lacked any intrinsic bond referring them one to another individually: as if existentialities might be causally chained or "plugged in" to whatever

parcel of nature, in the style of Mark Twain's "The Prince and the Beggar." So conceived, existentialities are no longer recognized as cadacualtic, brains are believed to be capable of producing them (because what is called "psyche" has been reduced to its acquired mental contents, some of which – namely, the new sensations – indeed are interactively generated by the brain organ) and minds, in good logic, are believed to be clonable.

Such a description is certainly improper to describe what is found as existentialities, but it may be proper to philosophically describe their common ontic constitution. In the Peripatetic line of thought, for example, Scholastic analyses came to depict a hylemorphic constitution that abstracted the unbarterability of existentialities by using a notion that has been called a "standard cadacualtez" – that is, a nomical or typical cadacualtez which, of course, is uncadacualtic. This process attracted some confusion regarding the Aristotelian series of souls (only vegetative soul, vegetative-sensitive soul, and vegetative-sensitive-rational soul, collectively composing a segment of the Great Chain of Being that once did represent, crudely yet to the best of human knowledge, nervous systems' evolution and the evolutionary sequence of the functions of relation) and the insertion of cadacualtic existentialities in such a series.

Aristotle conceived knowing, *gnoeín*, as a variety of metabolic assimilation only for the purpose, and with the precise objective, of being able to compose a unique descriptive series with which to delineate the full variety of living beings – by comparing species among themselves and comparing the developmental sequences of individuals. With this conceptual tool, Aristotle was able to achieve his purpose, of attaining conceptual means suitable for unifiedly and uniformly describing the living beings found in nature in all their possible forms. His informational view of knowledge, presenting it as a variety of metabolic assimilation, is thus why Aristotle managed to institute biology as a unified science. In this way Peripatetism and the whole of European culture found a coherent exposition of a sector of reality, the living beings. Scholasticism then procured the goal of extending this exposition to the whole of reality, establishing a description of every type of reality in ontological terms. When Christian Peripatetism paid descriptive attention to psyches or individual existentialities, its purpose was to depict their ontical constitution, which it accordingly did not do in cadacualtic but in fungible terms, as Matter, Form, and their instances are. Its pre-Renaissance ideas permeated most scientific descriptions during Modernity, even those of its ideological opponents.

Therefore, Christian Peripatetism, in order to account for the constitution of every individual, sensibly considered as its formal cause the matter signed by quantity. This name denotes the piece or particular portion of fungible prime matter that, while accidentally composing the individual of the case, after successive information by the Forms of the system's components finally assumes the Form proper of its species or Type.

For Aristotle, in view of his mentioned purpose, it was uninteresting to detect if within the series of organisms animated by a vegetative-sensitive soul the individuals of some species included an existentiality circumstanced to sense and move its body. This is the case of a dog, for instance. Other organisms lack such an existentiality in charge of biological functions, for example a starfish – or its common ancestors with the dog, if Aristotle could have paid attention to them. These other organisms are constituted purely in the hylozoic hiatus and operate in a purely reactive way: they are unable to inaugurate innovative causal series semoviently, that is to say with decisions. In addition, they cannot bring to an end an outer causal series and know its last effect as a sensory intonation of existential being. As mentioned, the ontic consistency of gnoseological apprehension or knowledge requires a break in the efficient causal series, and these unempsyched animals are entirely constituted in the hylozoic hiatus where all efficient causality is unbrokenly transeunt. These animals lack any intrinsically unbarterable element, and thus any knowledge inasmuch as experience: in these animal species having an Aristotelian soul but not circumstancing an existentiality, their "knowledge" is mere information, gnoseologically uncharacterized – and only metaphorically called "knowledge" by external observers interested in keeping Aristotelian homogeneity for the biological series.

The influential philosophy of Christian Peripatetism, with its affiliation to monotheistic hopes, found it pointless to refine the ontological principle of individuation in order to describe what is ciphered in the name, or cadacualtez. It was a feature eclipsed by culture's generalizations but assured by the "Good News" – that is, by the dogmatic perception of the ultimate ground of reality as Lover (*cf*. A. Courban's chapter 5, "Why One is not Another? The brain-mind problem in the Byzantine culture", in the book where this article is also to appear). Christian anthropology is monist – in no way dualist, as it is often erroneously believed to be on the basis of Platonic notions imparted by its Cartesian misrepresentation – inasmuch as the reciprocal unbarterability of the two "elements" compounding the somatopsychical personal unity grounds the dogma of the Creator's individual reference to every soul when creating it for a certain body and circumstance.

It thus was superfluous for Christian Peripatetism to require from *materia signata quantitate* the impossibility of justifying nomically the anomical reason why one is not forming one's psychophysical unity with another body, that is, why one is not circumstanced to interact with time processes from a different corporality – the body being the outer signal that, because of the unbarterability of circumstantiation, indicates a different cadacualtez. This found fact is not a nomical fact nor can it be conceptualized as such, either in our current description of reality or in the doctrinary beliefs taken for granted by Christian Peripatetism. For sure some Scholastics might have confused the two elements of hylemorphic constitution,

from whose concept is absent any intrinsic need requiring an unbarterable relationship with a single and particular instance of the other species, with body and existentiality, which are found to comprise it. Yet other authors found it futile and redundant to analyze and explain, in regular or nomical terms, what their faith manifested to them as a most singular loving act of the ultimate ground. All the more so because, on reason of their faith, they chose to focus on the communicable and mystagogic aspects of the existential finding, thereby contributing to the cultural eclipse of cadacualtez. This is why it was only rarely and recently noticed that the cerebral organ only determines some sensory contents of her or his experience, but does not determine – nor could it do this – who will appear circumstanced to use it; namely, the not nomical (*i.e.*, not standard) but cadacualtic and unbarterable constitution of a certain psychophysical unity.

This neglect was further bolstered by the time asymmetry of cadacualtic descriptions. Cadacualtez is postdictable but never predictable. If one's survey goes back from the existence of a particular existentiality, say that of Jane Doe, to her previous nonexistence, the former is already established as a part of the query. In contrast, when the survey is conceptualized in the opposite sense, one comes from the nonexistence therein – say, in a not yet fecundated ovule – of circumstancing relationships with any cadacualtic existentiality (namely, not from the nonexistence of circumstancing relationships with Jane Doe but the nonexistence of circumstancing relationships with any existentiality by then future) to the existence of Jane Doe's particular reality, not another. In this fashion, in one avenue of the survey (the latter, or causal sequence) this nonalterity differs from identity, but merges with it in the other, sequence-reversing avenue. The epistemological time asymmetry that in this way comes to affect the issue cloaks, habitually, the important distinction between one's being one because of one's history, namely the fact that the sequence of constitutive events makes one's instanceable features, and one's being not another because of a different source. In this regard cadacualtez is a converse of ipseity, the latter determining one to be oneself and the former making one's being not another.

Cadacualtez, the intrinsic unbarterability, unrepeatability, incommunicability, and singularity of every existential being, thus manifests as the ontic determination, in nature, of every event of a finite observer's finding herself experiencing in a circumstance rather than, instead, in another. Natural science finds psychisms that neither self-posit to exist nor self-circumstance to eclose. As their circumstancing is a constitutive contingency for finite observers, its unbarterability makes such event one and the same, even if iterated observationally over the years – one never being shifted or teleported to other bodily circumstances. As a matter of observation, each real observer in nature cannot derive its own place from the physical regularities forming its other empirical findings; less, to account for why the availabilities compounding his or her mental world do not become available

to another person. Certainly, this other in lieu of, say, the reader, could not detect any swapping, since as mentioned cadacualtez, although never predictable, is always postdictable; but before it happens (*i.e.*, now), "other in one's lieu" is fully understandable to everyone, and serves here to illustrate what the pronoun *who* signifies: namely, what is ciphered in the name. The variable indicated in "other in one's lieu" is what the personal identity means, alluded to in the function word *who*; cadacualtez is the ontic determination of each instance of its being brought to bear. And before a particular existentiality ecloses to nonpredicative actuality, as a subset of finitude among a plurality of separated psychisms, the physical constitution does not suffice to determine "who" shall avail of the availabilities of a psychism. For example, at the time of the physical constitution of the reader's body, the components in the maternal makeup and paternal spermatozoid that originally composed such a body did not suffice to determine (or even refer to) "who" was to avail of the reader's apprehension, semovience, and historical-biophysical circumstances including the species-specific palette of structureless characterizations stirred by her brain's states – rather than the states of, say, a reptile brain – and the remaining of the reader's body providing its own time acuity for her existentiality to directly apprehend some bodily constituents. The particular set of all these availabilities, which an existential finitude – say, the present reader's – does not posit but encounters, is not available to another finite semovient existentiality. Cadacualtez, a converse of ipseity manifested as the eclosional circumstancing of finite noeseis, which in each case makes '*their*' some respective noema causing each finite psychism's circumstancing to not an other brain, is thus intrinsically asymmetrical over time[1].

Although this asymmetry is conspicuous, its appreciation is not helped by the cultural occultation of cadacualtez. The conceptual situation is even worsened by the quite widespread misunderstanding of actuality as if it were predicative – presenting '*to be*' as it were a result of combining features, or predicates. As an example one might think of the "proof of the existence of God" by Anselm, archbishop of Canterbury from 1093 to 1109 ("God exists because one of his attributes is being perfect and he could not be perfect if he would not exist"), or the conception of mind as a software that by arranging nonexperienced contraptions generates experience (not seldom inconsistently conceived as a "nonpersonal personhood" consisting only of "unowned mental contents," so as to apply Locke's account of brain-mind relationships as a mind-generative efficiency harnessing together the organic source and its product); or the so-called bootstrapping cosmogonies. This confusion, commonplace today and probably also among the Sophists in classical Greece, is an old neglect of 'being' as enaction of a presence in the reality. 'Being' is not a result of such presence's features, and such a confusion between presence and description becomes crucial in the portrayal of cadacualtic realities. In this regard, because the logic of concepts asserts that being one is identical to being not another, the cultural eclipse of cadacualtez was reinforced, and its recognition looks as if it

depended on its being generalized – thus requiring the annihilation of the denotative aptitude of its concept in order to use it.

Deconstructing this composite cloaking, or eclipsing series of circumstances, demands heeding both that '*to be*' is really different from a combination of predicates and also the mentioned time asymmetry. In macroscopic affairs time is just an accidental occurrence, which comes from the differential acquisition of inertial mass by elementary "particles." It is convenient now to cast a glance on this topic. Macroscopic time process, as well as spatiality or dispersivity for forces, are secondary, derivative cosmological occurrences.

3. Building Circumstances that Evolve: Barygenesis and Time's Spatial Spread

Extramental things, the components of the hylozoic hiatus, compose a single realm that homogeneously features transeunt causation. It lacks any sink or source of causal action except in the microphysical scale (*i.e*. in the "bubbling", by all of the overlapping physical fields, of the particles that constitute these fields' potentials). Minds, in contrast, are cadacualtic and plural, as well as not point-like but innerly extensive and differentiable sinks and sources of causal action. Thus each intramentality modifies unidirectionally the frontiers with extramentality by means of nomical and non-nomical causation, while extramentality can reciprocate the transformative action only nomically. It breaks any purported identity of intramentality with extramentality: their difference is not one of aspects, but an ontical difference. The element of this difference that is central at this point is that every realm harbors contents or components that aggregate and evolve differently.

In the hylozoic hiatus, space is generated; namely, a dispersivity for forces comes to be, whose features it is unnecessary to detail here – although one might think of how mechanical levers do work (*i.e*., what supports the arms' remarkable relationships), to get a taste of the sense in which space is a dispersivity for forces. Extramental space is a secondary offshoot of more basic physical determinations. At this time, every ten minutes more than three million kilometers of new space opens up between us and the Pisces-Perseus supercluster of galaxies, while in the same number of minutes more than 800,000 kilometers of fresh dispersivity also opens up between us and the nearer Virgo metagalaxy, so that also inside the small volume of our bodies new space must continuously force elementary components ever more apart, though on so small a scale the effect is unnoticeable. Through this space, the force carriers do transport or propagate the action of force fields. Such spatial hauling or conveyance of packets of efficient physical action is a key feature.

Photons (light) carry the action of the electromagnetic field and gluons carry the action of the strong nuclear-force field; since both such spe-

cies of carrier particles are massless, they move and propagate the respective field's action with causal celerity, *c*. This is a speed that, light being an efficient causal action, is also the velocity of light. Photons frequently interact with the matter interposed in their path and become absorbed into some change of this absorbing matter. In making this change, the causal action carrier (photon) sacrifies its own being, that is, it is thus annihilated: this is why observers have no impression of the outer causation but only of the produced changes.

This scientific point deserves philosophical underscoring: nobody could reproach David Hume (1711-1776) for not having foreseen that, more than a century and a half later, Max Planck (1858-1947) was to discover that physical causation comes in packets, so that in producing effects action packets annihilate and one could only see the effects – never acquiring any impression from the (exhausted) causative action by observing the extramental changes it had already produced. Hume was expecting such an impression for action and, on its nonoccurrence, rather than declaring that causation yields impressions only when the observer is the very causal agent, Hume declared causation to be an ungrounded idea both for extramental and for intramental realms. Hume's mistake is important in the modern history of ideas. Hume's error induced Inmanuel Kant (1724-1804) into the slumbering in which his subjectivist-transcendentalist dream occurred (Kant himself, of course, viewed it inversely, stating that Hume awoke him from his "dogmatic slumbering") and, bolstered by political and ideological confrontations, persuaded many moderns to view minds as ineffectual (epiphenomenal) and being as predicative (analytic). But let me return to natural science.

The change that the annihilated photon caused in matter may later somehow subside. In doing this the absorber emits another photon, or several of them, with some of the *energeía* or capability of generating change (*i.e.*, the field's action) contributed by the previously absorbed photon. Inside condensed or gaseous matter, those photon substitutions are especially frequent. There the space traveled by each photon is very short: the energy (field's action) of a photon created by the Sun's nuclear furnace delays about a hundred thousand years in exiting the Sun. By then its carried action has been absorbed a very great number of times, each time to be later emitted as a new photon that travels much less than a millimeter before restarting the absorption-emission cycle. The many repetitions of this cycle's characteristic time, rather than the sum of travel times, is what adds up to the largest share in the mentioned hundred thousand years. In interstellar space travels are longer – once having exited the Sun, a good proportion of solar photons arrive at the Earth unscattered, after an eight-minute trip – and some photons from remote galaxies actually travel for several thousand million years. Long or short, nevertheless, the duration is always the same if measured by a clock placed in the photon itself: no time. Or, to be exact,

just the time-like thickness of all nature, namely the "interval" in which no physical force could ever cause a change.

Change Is Forbidden between Physical Cause and Effect – Or, Why It Is Impossible to Plant an Interruption between the Observer and Her Observed Diversity. No matter the length of the photon's journey, for massless carriers of causal action the action is not spatially conveyed if measured in the carrier's own frame of reference: action always acts in the same spot, in its "local" immediacy. So time does not elapse between emission and absorption, even if outer observers should construe the causal carrier as taking millions of years "in flight." This is a crucial link that articulates space, time, and causality. It thus plays a pivotal role in relativity theory, where it makes another scientific point that deserves philosophical underscoring. Because of the influence acquired by Hume's error and the persistence of societal factors that originally induced it, Poincaré, Einstein, Lorentz, Hilbert, and the other founders of relativity physics saw in this special celerity, *c*, a feature of light – "light's speed invariance"; light and visual features (*'videas'*, as *'Ideas'* was originally written, with an initial letter digamma already lost by the Greek alphabet in Plato's time) have been always a special predilection of Platonisms – rather than a feature of every efficient physical cause.

This narrow attribution was bolstered by the fact that by then only two varieties of physical causes were distinguished – gravity and electromagnetism, light being known to belong with the latter – and that among physicists preponderated the Pythagorean-Platonic views that, finding time's irreversible elapsing deplorable and unbearable, voiced and justified the societal struggle against time, wishing and presenting real causation as illusory. Such antichronic views made it seem credible that all the segments of an interval exist simultaneously. This in turn suggested that the formalisms employing a concept of four-dimensional space-time, proposed by Hermann Minkowski (1864-1909), do indeed match physical processes because past and future are in some way actual, and is why studies in relativity physics used to be infested with time machines: the theory both allows for and demands time travel in order to preserve self-consistency of dynamic space-time solutions. However, both time and space just display features from enactive causation.

The link joining efficient causation, space, and time is the fact that what is usually named time consists of situational change; namely, change of situations, or shifting arrangements of positions in dispersivity. For example, deer ramble and clouds shift, causing effects anywhere they pass. Like deer and clouds, the microphysical causal carriers also move. But causal carriers only cause effects at arrival, because they are discrete packets that generate only one effect. Every discrete or indivisible quanta of field action communicates its own being to the effect, which is a change that thus comes to exist. Causal carriers cannot carry and sustain another effect for, say, communicating their position and so use up this single effect while

moving, for example, in support of exchanges that, by delivering an impression to the observer, would result in their observability in intermediate stations. If causal carriers did so, as matter does, they would lose their sole effect, and nature's transformations would "hang," an outcome that Hume did not imagine. In this context, genuine or translocational propagation always takes time, or, while any propagation is on its course, nature grows older: its situations metamorphose. But causal action cannot be delayed by its propagative travel. From their own reference frame, the quanta of field action have always been intrinsic to their effect and thus no change comes to exist. (Thus what every packet of the efficient cause communicates is not numerically distinct from its own entity, and exhausts it in a wholly local transformation.) How, then, one might wonder, is it that light only causes effects at its arrival? Meanwhile, is not its causation in abeyance?

Such a basis of relativity physics instances in fact the more general case, that no cause – and circumstanced minds are also efficient causes – can "become," or delay its efficacy. To be transformative, causation is exerted in intransformativity, within the interval-like "thin" actuality of nature. One might say that causation is abeyant or suspended for a while, but since any while of situational change comes from causation, where causation is abeyant there is no gaugable while. Therefore, for calculations, one would do better to word it as relativity physics does, pointing out that time does not elapse for the light ray or for any other massless quantum of causal action, no matter how long its propagation takes or which line of march it is steered through. In turn, those force carriers that possess inertial mass keep a certain proportion, mathematically determinable, of this same effect.

In sum, from the photon's frame of reference, no time passes. As far as it is concerned, the point of propagation and absorption are touching. A combination merging all the "own" referential frames, if perceived, would present Nature as a nonspatial interplay of determinations self-conditioning its parceled causal influences. Transformatively efficient causes in nature, counting of course minds' causal efficiency exerted in it, may remain "not-yet-done" or "in propagation" only if depicted from reference frames other than their own. Efficient causal action – not to be mistaken as its effects, which *e.g*. for light's specific modality of interaction is observed to take, after the photon no longer exists, the next 10^{27} minimally possible physical instants (5×10^{-17} second in total) or longer to occur, so many interruptions could be planted in this process; it makes a good part of the protracted time taken by photons to leave the Sun – is delivered within a single physical instant, if described from its own frame. This also maintains its effected action local – that is, ignores spatial extension; or, more accurately said, keeps the effected action within a minute spatial locality.

This locality varies in size for each interaction modality, yet is always defined above the Planck-scale graininess, which in current nature makes no possible causal demarcation of a spatial locality smaller than 1.616×10^{-33} cm. One might say that it is for causal carriers to act locally (also to set the

locality's graininess, but this is another topic) that time does not elapse at their propagation, and vice versa. These two bound realities, namely that massless causal carriers cause effects locally and that their propagation takes no local time, constitute the brute fact of nature that the entirety of relativity physics rests on. And, because we are finite semoviences, our efficient causal action in nature should also comply with such a restraint (in a certain proportion to the inertial mass of the action carriers we directly use to influence the next-to-immediate outer circumstance – that is, to modify our brain electroneurobiological state), thereby giving rise to many psychophysiological effects that biospheric evolution profited from. A bit more technically said, the fact that time does not elapse at the causal carrier makes its action maximally local with Planck-scale graininess, or its special ratio of distance traveled to time taken yields the causal action minimally dispersive ("the closest possible to zero") at the path length. This applies to every causal action, so the causal status of knowledge is why it is impossible to plant an interruption between the observer and her observed diversity. It wrecks all the doctrines positing inner intervening mediations, symbolic and others, and points to the homogeneity of the semovient and nomic causal efficiencies.

Barygenesis, Or How Selective Acquisition of Mass Spread Situational Change ("Time") and Set Up Astrophysical-biological Evolution. Yet surely in us, in the deer and in the clouds, there are other action quanta that are not causal carriers of force. Those others are among the quanta propagating at any speed. Massless causal quanta cannot vary their speed, namely *c* or causal celerity; they can neither decelerate nor accelerate, neither slow down nor speed up. Instead, those other quanta, some of which cannot impose situational modifications while others are efficient to cause change, acquire inertial mass. This mass is lent and not intrinsic to them. This process, not yet clarified, is called *barygenesis* or origin of mass (not to be mistaken with *baryogenesis*, the origin of the excess in our universe of the particles called baryons). Those particles that cannot impose situational modifications are known as quanta of matter fields, probably as an echo of the hierogamy models – some physical features nicely dovetail those ancient cosmogonies[2]. Those mass-endowed particles that can impose changes to situations are known as mass-possessed quanta of force fields; they are, namely, those of weak nuclear interaction and possibly those of the force field where minds find their immediate circumstance. These action quanta with inertial mass can vary their speed and could never move at strictly *c*.

That is, *c* is what mathematicians call a limit by right and by left. But *c* is a limit related to the instant's "thickness" and requiring all the energy of the universe for any quantum with inertial mass (whether of a matter field or of a force field) to cross it. The combinations of matter-field quanta possessed with inertial mass and force-field quanta whether mass-possessed or massless make up the situations (*e.g.*, the deer under the cloud) whose

modification by physical forces is that *to which* time elapses – for instance, how long the moving cloud takes in leaving the deer behind, or how long our brains remain in the same place. (Dragged by the sum of known astronomical motions at almost 400 kilometer per second, a speed also probably close to the velocity with respect to the local space, brains linger in contact – on the scale of an atomic nucleus – with a fixed volume or region of its own size, also covered or suffused by all physical fields, for only about 10^{-21} second; in the Planck scale, instead, brains are stationary during 4×10^{-41} second – that is, no more than 730 Planck instants. This maximum figure is relevant for the physical description of the finite mind's circumstancing to a parcel, or portion, of the action-quanta-bubbling field whose manifesting and compliant-to-semovience surf the mind is restricted to "ride.") That time elapses only to situations is extremely important because we causally efficient circumstanced existentialities do not exist *à la* Minkowski – that is, along intervals – but inside the situational intransformativity of the physical instant's actuality, which is where all our memories, projects, and interval-minding actions are ontologically crammed.

In this scenario, the causal quanta affect the motion state of noncausal quanta. This corresponds to Newton's concept of force. In fact, this effect is the origin of the first's being labeled "causal" or causative and why they are also named carriers of the action of force fields. The noncausal quanta, all movable at variable speeds, vary their velocity as an effect caused from those packets of field action or force-carrying particles: both those that cannot travel at less or at more than exactly *c* speed in the medium (*i.e.*, photons, gluons, and probably gravitons) and those that acquired some inertial mass (weak nuclear force carriers, and probably those at which minds find situational immediacy) and thus move at a specific, different speed.

Such is the hold of time grab: *thus did time grab hold.* Situational change was originally restricted to microphysics, but in this scenario it stretched its range to greater dimensions: this is the origin of time's power over macroscopic nature. As mentioned, the secondary nature of this space is observed in the formation of fresh space in the middle of preexisting extensions of such space, a process now thought to occur everywhere: time course in macroscopic scales as well as extramental space are thus a secondary offshoot of more basic physical determinations. In both of them, causation is exerted in intransformativity – that is, "locally" and within the interval-like "thin" actuality of nature. It is nothing out of the ordinary, then, that some basic determinations do not find their way into features of spatial extramentality and so appear as unlocalizable. Minds also do it, and this is why they exhibit mnesic retentiveness and cause effects. To be transformative of spatial situations, both minds and action fields impose determinations on the local availability of causal carriers. The causal carriers of the force field that forms the minds' immediate circumstance is the most that natural science can expect to observe – and this, even, at least for the time

being, could only be done through the coupled states of the brain electromagnetic field. Science cannot observe determinations, whether those of minds or those of fields.

In the same way as existentialities, the mentioned action quanta also come into existence as at eclosions – and the space unlocalizability of the origin of actions not only characterizes the extramental determinations involving minds. The determinations involving all the physical fields are characterized in the same manner, so that all that is seen has not been made out of things that actually appear. It is a general feature of the origination of efficient causality. The determinations, whereby such fields make eclose every new carrier of their forces to a certain time and place, are not local and even are unlocalizable in the field's volume, although each field suffuses the whole universe. It parallels the fact that we can localize mind's actions – that is, their operational presence – but not minds themselves.

4. The Unoriginated Portion of Reality: Features and Relationship with the Originated Portion

How could such a nature work as an instrument for the minds eclosed in it, which in turn find their intellectual development working as an instrument for dimming the planet's glare? To attempt an answer, imagine that you are God. Or, if you do not believe in any revelation, imagine that you are the unoriginated portion of reality, the groundwork and origin canceling the nonexistence of everything else. Imagine that you are what enacts once at a time the actuality of the situations of all present nows, complete with their force and space scales, successive shapes, and consecutive eclosions.

Factual research is only certain of two things about this unoriginated portion of reality. First, that it is not an entity: it is but does not exist (in the proper sense of "ex-sist" – that is, coming out from something else). This is so because, as Martin Heidegger (1889-1976) stressed, one could not explain things that are entities in terms of other entities. The notion is frequently named the "ancient-India lesson," because piling up entities, such as mighty elephants, massive turtles, and oceans, or any more modern and powerful cosmological keystones such as big bang-injected humongous energies, is now clearly seen as starting never-ending series. Second, that it is a personal reality, in other words that the nonentitative, unoriginated portion of reality takes decisions conferring actuality to what it wishes in a conative way analogous to that which one uses for nodding the head or forming a thought. This is so because it cannot be nonpersonal, that is to say a network of distinctions or necessary Fate, since distinctions do not suffice to confer actuality on the being of realities, and because the sole originating enactments found situated in any break of causal chains stem from personal decisions. Persons are the realities extant at causal chains' breaks, a definition that for empirical science entails semovience and

gnoseological apprehension of at least a part of the involved reality's ontic consistency, as the foregoing discussions illustrated. For this empirical science, the apodictic personal reality shows itself capable of bringing about two different outcomes. One is canceling nonexistence into the being of the entities that such science studies. Another is determining this being among a variety of forms for its causal behavior. The factual demarcation between reality existing rather than not existing, on the one hand, and reality to be as it is, having the exact nature it has, on the other, makes the following situation plausible for empirical science's considerations of the totality (in unsought yet remarkable conformity on this point with the religious reflection in both Orthodox and Catholic traditions and derived philosophies, as well as probably in Jewish ones[3]). Namely, that the former aptitude generated the latter exactly as itself and, in doing this, also generated in the second aptitude an axiological appreciation or "love" toward the former, which, to be actual, must be also semoviently taken on by the latter – that is, proceed also through the latter. Because all of these various preternatural realities wedge causal work in causal breaks and neither their number nor their peculiarities are necessary, none of them could be envisioned as nonpersonal.

This sets a plurality of nonfinite cadacualtic persons in the apodictic or nonproduced ground whereby essents or entities exist rather than apodictic nothing actualizes. So, pluripersoneity and interpersonal relationships may plausibly take place in the apodictic ground. This may occur, because each nonfinite person is the entirety of the ground's consistency (*ousía*), with a distinctive, relationally-set cadacualtez. Insofar as the ground's same apodictic consistency and nature are communicated without diminution to other nonfinite persons, they are the absolute ground without bringing any composition into it. However, since to the natural science's considerations of totality the actions performed by nonfinite cadacualtic persons outside of this ground appear unified, no natural science could ascertain how many these plausible, nonfinite cadacualtic persons in fact are. Natural-scientific reflections on totality should, rather, leave it to the extrascientific considerations, which, considering it impossible that a production of finite persons would leave them unaided, accept providential revelation. This restriction matters here, inasmuch as it limits our envisaging this pluripersoneity. In your imagining that you are the unoriginated portion of reality, you should imagine that you are ontically constituted as a plurality of cadacualtic persons. It of course exceeds our modeling capacity. One can at least proceed as regards the actions performed by nonfinite cadacualtic persons outside of this ground, which appear unified. So, now imagine that you, the unoriginated portion of reality, decide to generate free entities. Of course you cannot decide it on a whim, because you are not indifferent to good and evil, which you cannot establish other than as correlated with your wisdom and love. So your vigilant immediate presence is on the side of good and justice, yet you decide to generate entities free of placing themselves on any side. How do you do it?

You, the unoriginated or nonproduced portion of reality, cannot mandate freedom because mandating it would wipe it out. Neither can you simulate it, because freedom comprises the power of causing its results and the power of causes is not simulatable. What then do you do to produce genuine freedom in reality, if freedom does not admit either coercion or simulation?

One of the ways is that you erect a nature whose galaxies, star-studded skies, complex substances formed in outer space, planets, and living beings follow general rules of transformation and evolve impersonally, so that you may rest interventionally silent. That is, you make an extramental nature with everything possessed with forces efficient to cause the proper effect, so that you may govern nature only through very general interventions of your determination. You make things appear like a display showing that you have absolutely no task to carry out and never had one, so making yourself forgettable as if you yourself might well not have occurred at all. This nature may even be nonuniform in its basic regularities: these need not be the same everywhere. Thus such extramental nature may contain infinite subuniverses that do not allow the development of empsychable organizations. Yet in some at least of its sites, defined by extremely precise conditions of hospitality to life, for brief periods substrates are formed that allow personal existentialities to interact and actively learn about extramentalities. In this way your vigilant immediacy makes an observable universe endowed with the precise features that the intelligent finite existentialities, which you may then circumstance to the highly improbable empsychable bodies evolved in it, would expect if, from the start, you had not been there – and there had been no designer, no purpose, no value such as absolute good or evil, nothing but blind and relentless indifference.

For example, you may create a multipotent energy, or segregable efficient action, that acquires being in packets whose eclosions and applicative inclusions are not all co-occurrent and, moreover, could not be determined as such because of intrinsic indeterminacy. Their applicability thus sets up a dispersivity (a dynamic space, or overlap of the fields generating the action packets) that defines places for arranging shapes while vacating itself outside of its intervalic thinness. Dispersing itself nomically in the growing dispersivity that it so generates, this segregable action separates into varieties ("forces," or modes of causal efficiency, or interaction modalities) whose diverse mutual couplings barygenically stretch beyond their microphysical scale the organizing distinctions due to its packet's eclosions. Thus this segregable causal efficiency sustains all nomical change by vacating itself outside of its interval-like thinness. *In* such at every instant not-yet-transformed actuality this segregable action causes all nomical transformations. So it becomes spatially dissimilated into macrophysical shapes, termed situations, that form and transform along causal courses whose past is substituted. Such segregable, nomical efficient action forms the hylozoic hiatus. Some of its situations and their antecedent becomings, nevertheless, turn out to be molarly referred to as ontic-ontological differentiations in the

finite existentialities (persons, some of whom are to become responsibly free without your ostension) that you then cadacualtically make eclose also therein, and who make simultaneous their constitutive references to both antecedent and derived situations. All this is done so that you, the nonentitative apodictic ground or unoriginated portion of all reality, although immediately supporting everything in its ever-present origination, never appear in doing your job. Keeping you only investigatable by way of shadows and enigmas is the unknowingness-providing function of a nomically transforming hylozoic hiatus. The interventional silence of the unoriginated portion of reality shapes the minds-implementing course of the palindrome. Because if you appeared – for example, exposing any intent that free beings should appreciate your love or support your project and thus value responsible freedom – you would coerce them to be free, annulling for them any genuine freedom.

In natural science's grandest picture of reality, this seems to be the most plausible account for why existentiality-controlled animals continue to be born, and suffer; that is, why natural and artificial dissimilating substrates always attract existential eclosions – which can be trustably used for optimizing thermodynamic relaxation. In its broad outline, all the originated portions of reality came to exist because of the unoriginated portion and their usefulness is not other than supporting genuine freedom in a multiplicity of finite existentialities. Natural "laws" serve to ensure that genuine, actual freedom appears in nature. Freedom is factually found in it as well as freedom's dependence on this empirical unostensiveness – at times excruciating, as if it was an abandonment. Such a freedom would be spoiled if the apodictic portion of reality, and nonentitative source whereby there is something rather than nothing, proclaimed what it values, why there is something rather than nothing, and how it expects that free existential finitudes will utilize the genuine feeedom protected by ignoring all that.

To be sure alligators, ducks, kangaroos or minds eclosed to most artificial substrates will not act on ethical motivations. Nonhumans and often also humans act on impulse, on passions. Controlling oneself is a matter of social breeding, a cultural issue, paleontologically recent and cosmologically ephemeral, that the body and brain of many animals do not allow; or allow it only rudimentarily, as among dolphins and chimpanzees. Yet, as a scientifically ascertained fact, had those animal's bodies and brains not been evolutionarily developed, we would not have developed our brain as needed to permit our society and culture; had this evolution not been nomical, we would not have our freedom uncoerced.

This we owe to the misery of less ratiocinating existences, besides the love and understanding that we frequently exchange with our domestic animals, horses and herds. Yet dignity toward others was always recognized step by step. While, still, foreigners from faraway cultures are often tendentiously presented and quickly identified – with a feeling of relief – as obviously less personal and worthy than the intragroup's "full persons," in turn

women, slaves, American natives, African anthropoids, and any intelligent extraterrestrial organisms motivated learned discussions to ascertain if they indeed deserved complete respect. It is not therefore surprising that traditions affect the ways in which we scientists view, value, and speak about animals other than humans. Only recently did it became apparent to us that mind-possessing animals are nonhuman persons, existentialities equal to us whose circumstances dissimilate their ontic consistency into mental contents different from those which our brains, adapted to another history, in turn dissimilate.

So that you, the unoriginated portion of reality, having risk-takingly voided your axiological priority into other genuine co-creators, cannot expect that we embrace your values if those other suffering existentialities were only instruments to allow our genuine freedom. Would you negate the intrinsically valuable condition of existentialities by just using and discarding most of them because they exhausted themselves in allowing *others* to be free? To enable this they gave all that they had; do we not owe to their martyrdom our arrival to be genuinely free, with the indecisiveness of ultimate issues that is precisely the guardian of our freedom? Their eclosions let you have your interventional silence. Their sufferings, in circumstances that they did not choose, ensured the natural selection of our quota of sensibility and intelligence – and, since actuality is not a predication and thus is acquired on establishing value, persons, whether nonhuman or human, are ontologically defined as beloved realities, cherished as their circumstances were especially provided for them in each case. Therefore, in the new role of natural scientists (in the old one with limited subject fields I should not have opined if a paradise or fulfillment of constitutive love exists, but for investigating values I must consider the articulation of all the facts empirically found), finding (as also does *e.g*. Saadia Gaon, 882-942: *E. Ved.* 5.1) that the need of interventional silence precludes a single scenario for ethical sanction and, thus, requires the reality of at least this afterlife fulfillment, such a paradise gets plausible – and I can certainly affirm that, if there is such a paradise, it surely is to be shared by nonhuman circumstanced existentialities.

Then the lamb will lie down with the lion, their lives and deaths counting as martyrdom. Every mind, every circumstanced existentiality, is also ontically and ontologically constituted by value – even the mind unbarterably composing a personal unity with the last caecilian body (limbless burrowing wormlike amphibians) or regulating any other organism: or, in other words, minds' ontic consistency is an amorous condition. Only the growing and then declining number of answerable finite existentialities in every subuniverse can reject this love, rebuffing the ultimate project, and chose to die. Yet who takes the risks? He who provides circumstances, the unoriginated portion of reality that in setting up everything else also sets its value – and keeps interventional silence about it, so that this value may in turn be embraced or rejected by some finite existentialities.

Apart from these rationality-exercising existentialities, which are a tiniest share of them all, empsyched nonhumans join the large portion of humankind that dies before attaining any bloom of liable reasoning and the humans lacking all possibility of ripening their powers save to tackle bodily needs. Their eclosions allow you to be an ultimate ground so incredibly stupid as to have set nomic natural causes, set by love; for, it is because of love that you void yourself of your importance, as it is seen when scientists look at only one course of the cosmological palindrome. Your love prevents you from remaining the unique ground of reality; by such a love you obey, you void yourself of your ostensibility and preeminence, you take orders so that our technology, or animal reproductive behavior, arranges a proper substrate and you, obediently, circumstance a personal existentiality there: you obediently give being to an anomic existentiality for unbarterably constituting a person together with such a viable substrate, no matter if artificial. Circumstanced persons, whether nonhuman or human, are thus defined as beloved realities, cherished as their circumstances were especially provided for then in each case, but it does not entail that they are forced to reciprocate these feelings.

Those axiological considerations are tied to the eschatological plausibilities set by the scientific description of the whole of natural reality. The concept of the mentioned paradise of course is that of the cancellation of your unostensiveness. You may cancel it as soon as the bodily conditions become reunited – that is, as soon as some animal species have evolved as to dissimilate enough mental contents and you added to the circumstanced existentialities, interventionally, an ontic texture supporting a full insight of reality without need of developmental experience. Yet such infused cognizance does not touch freedom. Since you are not limited to following Linnaeus's or any other classification of biological species, you are in this way creating what may be properly named the full human species; it does not matter that the ancestors of their body, lacking in such ontic texture, had previously evolved the entirety of the bodily resources and even developed communicational, lithic, fire, sailing, and other technologies. However, the individual persons circumstanced to your new species, even if capable of adhering to your project, may also wish to refuse it. Your prevision of this refusal justified your former unostensiveness; your frustration at it justifies your "expelling them from paradise," coming back to such unostensiveness.

5. Death Is a Biological Fact, Personal Existence Is Not.

The ultimate gift of conscious life is a sense of the mystery that encompasses it, as Lewis Mumford once wrote. Insofar as the anomic determination of every cadacualtez impedes the natural sciences from describing the encountered reality as any single set of fundamental facts transformed on any single set of fundamental regularities, and from expecting that any such description could endure as the foundation of all natural science forevermore, natural science has recovered such a sense of the mystery that en-

compasses conscious life: for what it is existentially worth and also as a tool to modify the world – which natural science always proclaimed as its ultimate goal (see Bush 1945).

Ultimate value makes every existentiality ultimately nondispensable. Sensing semoviences – percipient agencies, sentient intelligences – irrevocably stay as the beloved realities among the facts encountered in nature, while other facts appear as a means used to uncoercively attain differentiations in the ontic consistency of such sensing semoviences. I will still return below to this palindrome-dynamizing, irrevocable ontic and axiological disparity between existentialities and extramentality. First let me note that, accordingly, any gnoseological apprehension active by itself in the absence of organically renewable noema, whether metaphysically (after death) or circumstanced to carriers unresolving a current neurodynamics (as during a too short interval, or in deep sleep), to direct any actual putative actions may still depend on effects caused indelibly or constitutively on it by its unbarterable biographical differentiations. These actions, in off-body noematic circumstances, seem solely of the mentioned kinds: the affirming options, and both unintonated and phenomenizing reactions stirred through sedimented or through innovative semovient operations. This grounds the metaphysical alternative concerning finite noeseis bereft of unbarterable brain-provided noematic refreshments. The derived character, secondary in respect of efficient agencies, of both a particular dispersivity for forces (extramental space) and the barygenesis' extension of time to macroscopic extramental courses, was noted above. What can a natural science, expanded by its recognizing in nature cadacualtic semovient observers whose existence is unassailable by the formation, transformation, and obliteration of the bodily circumstances that became theirs, tell us about it? Simply that postmortal finite existentialities in such a state are to exist within the instantaneous actuality – like us premortal ones and like every other efficient cause, acting only locally – but in nondispersivity, that is to say, differing from us premortals only as they lack the causal chain for exchanges with extramentality, provided by the respective bodies.

So their noematic contents acquired in dispersivity (memories and their elaborations) are to be provided only by their ontic consistency, which as we have seen neither comes from, nor was furnished by, what was their anatomophysiological circumstance – that is, the body, no longer existing after death. Thus I see nothing from preventing postmortal finite existentialities in a bodyless condition from keeping themselves semoviently operating, with the objects differentiated in their respective onticity, in the same operational allowances of the sensory and spatial dimensions where they learned – while they were bodily circumstanced – to conserve operationally those objects. To those basic operational allowances should be added the other nonspatial operatory possibilities (such as mathematical operations, or family "space" references) which precisely show that such semovient operations occur as modifications in the ontic consistency of these existentialities

– and not in the sensory and spatial dispersivity whose set of allowances and restraints was learned to be kept in them (that is, in those existentiality-transforming semovient operations) for biologically adaptive object conservation.

Such a natural science also tells us that circumstanced existentialities were instrumented as a means, that is functionalized, by some physical process – in other words, the cosmological-biospheric evolution – which in turn was functionalized to afford responsibility to some finite semoviences. The fact of having been circumstanced to evolutionarily developed anatomophysiological means for realizing the situation, entails the mentioned responsibility. A constitutive but – because finding oneself living in such circumstances is itself a nonchosen surprise – a noncompulsive responsibility that, as well as the enrichment of their ontic consistency acquired with the utilization of their freedom, does not depend on their continuing availing, or on their being bereft, of brain-provided noematic updates. Sense (meaning) is what is at stake in a time-processes-including reality not originating from necessity but also setting, with being, axiological value. This is so because the nonentitative, unoriginated portion of reality is not forced to set this value under any necessity that would spoil its freedom. However, once having set this thereby-worthy entitative actuality, the nonentitative, apodictic portion of reality encounters the value-including ontic consistency of this actuality – just as each cogitating finite existentiality finds her own doubt-positing act withstanding the very doubting action, at her cogito.

In the same way postmortal existentialities in an unembodied condition might cause in their onticity reactions to their own actions. Yet the severe limitations of all animal and human biographies make one think that these limitations would be canceled if the mentioned paradise is to be enacted[4], though of course natural science could not find further differentiations metaphysically appended so as to enable their postmortal existentialities for a full grasp of reality. All things considered, axiological responsibility comes with axiological value and affects all co-creators: as well the unoriginated portion of reality as the circumstanced semoviences who are accountable for their behavior both before society and in regard to the ultimate sense. This is the intrinsic moral lesson that the natural world has to teach us. If life is a great surprise, I do not see why death should not be an even greater one, as Vladimir Nabokov once said.

But, as regards the ontic disparity between minds and extramentality, the fact that being's nonpredicational consistency makes absolute nonsense impossible, sets up another palindrome, and also a palindromic relationship between the two palindromes. The mutual functionalization of minds by extramentality and of extramentality by minds, which factual science discovers, cannot itself be absolute. This is so because the disparity of minds and extramentalities reflects a disparity of absolute or ultimate sense. Extramentalities cannot be loved by themselves nor reciprocate love as, on the contrary, existentialities can.

This comes from the absolutely most basic of all differences, which is the difference between ontic enactment, or actual being, and non-being or absolute nothing. Because being is not a predicate, this basic difference cannot be distinctionally exhausted. Necessities cannot acquire enactive actuality by themselves. Astounding and incredible as it may seem the finding that rather than absolute nothing, being and *lógos* actualize, our direct grasp in ourselves of what being is, though ineffable, allows us to perceive that, while enactment – even preentitative – can enact distinctions and actualize a *lógos*, no *lógos* can distinctionally enact being.

This is a fundamental disymmetry, based on the mentioned, most basic difference. It grounds the fact that extramentalities can neither be loved by themselves nor reciprocate, as instead existentialities can, because the being of all in the hylozoic hiatus is ultimately fungible. A unique *lógos* sets up their being. In contrast, as we saw, every person is nonlawful, or illogical, his or her cadacualtez being a unique affair of existence that does not belong within any realm of essences. The coming into actuality of every person is thus setting, so to say, a separate *lógos*. This is why the palindrome found by scientific observation is not ultimate and becomes instead dynamized into further palindromic dynamics, inasmuch as neither the whole hylozoic hiatus nor any of its components could ever be anything else than a means – and its functionalizing of minds just a recognition of the minds' capability of also getting instrumental value – while the realities loved by themselves can also reciprocate, or may not wish to.

The possible reciprocity of love between circumstanced and unoriginated persons inchoates the new palindromic relationship. It is what enacts into actuality the palindrome found by natural science and is also enacted by it – in still a new palindromic relationship of a further order or level. Yet it runs not only on being and not being but also on love and violence.

What in sum does the apodictic portion of reality do that attracts the attention of natural scientists? In setting up this realm of nomical evolution, namely nature, the non-entitative, unoriginated portion of reality mutely plays, in the nonnecessity, gratuity, and superfluousness of installing such a realm of nomical evolution as well as the existentialities that differentiate there their onticity in reference to their circumstances – some of whom so may become uncoerced co-creators. It sets this reality as if we uncoerced co-creators were necessary to solve problems, and thereby it stakes itself, as we co-creators in the new reality inaugurate values that gauge even such a silent play and its responsibility. As often is the case, it all started as play and matured as love. A reciprocal love demands full acceptance of risks, empathy, and understanding, an understanding of course beyond the reach of most finite minds, nonhuman as well as human, and which, if at all coming into existence, is to be provided just like existence: gratuitously, because what is loved is free reciprocity. *Mas la vida tiene abismos insondables* (life, nonetheless, has unfathomable abysses), as says *Íntimas*, a tango by A. Lacueca and R. L. Brignolo, and "The genre of the palindrome,

playful and ludic as it is, nonetheless has a strong implication of violence" (Greber 1996: 142): this gratuitous reciprocity also may *not* be provided by the unoriginated portion of reality. This is what is tremendous about it. And also palindromic: if one is frightened at that, that also frightens it.

Note:

This article is based in part on material in a book finished time ago and not yet published (now partly summarized in Crocco 2004 b), as well as on Spanish teaching materials.

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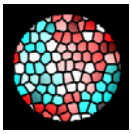
[1] This paragraph is taken from the *Glossary* in Ávila and Crocco (1996, page 928).

[2] "Is there much difference between the old lady's turtles and the fundamental laws of physics, if from these laws a physicist can claim that the totality of phenomena can in principle be understood?" Isabelle Stengers, "Turtles All The Way Down," in Stengers 1997: 60. Trans. P. Bains.

[3] In Jewish monotheism, one from several possible arguments (others, *e.g.*, are related to the karaitic-mutazillite tenet that God only commands what is already good, rather that it becoming good because of God's ordering it) might be the following: Divine love is plenitude of ontic enactment in generated realities. Why is the execution of *mitsvot* necessary in order to allow the fullness of divine love? The Law (*Torah*) can neither impose Itself to God nor be below Him. Thus It should be in His same ontic level. But God is one and is personal. Thus both generative and specificative divine factors may be understood as making the inner pluripersoneity of the single Ground, as well as the reciprocal love that the First generates with the sanction of the Second. Although Jewish theologians have not yet stressed any cadacualtez distinguishing each of these three realities that, being in God's ontic level, could neither ontically differ otherwise nor being non-personal, the usual translation of *Torah*, namely Law, refers to the traditional etymon, *Lógos*.

[4] King David's inspired hunch, or perhaps that of one of the voices placed under his patronage, chose it to illustrate ultimate justice in Ps. 36 (V. 35), 7: "Lord, you will make men and beasts safe."



revista
Electroneurobiología
ISSN: 0328-0446