THE UNIFIED COMPLEX-DYNAMIC ORIGIN OF TIME, INTENTION, LIFE, AND EVERYTHING

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Paper submitted to the 2016-2017 FQXi Essay Contest, 17 February 2017

Abstract

Based on the unreduced, non-perturbative solution to arbitrary interaction problem, we show that any interaction process underlying real system dynamics and object properties gives rise to irreversible time flow, universally specified evolution purpose and meaningful intentions at higher levels of universally defined dynamic complexity. The new mathematics of real-world complexity contains thus well-specified intrinsic teleology due to its rigorously derived extension with respect to usual, "goal-free" and "mindless" theory. We outline major aspects and applications of that extended, naturally teleological and causally complete science framework, including critically important problem solutions.

The dynamic origin of time, change and its causal direction by the unreduced interaction analysis

While every real structure properties and dynamics originate in underlying interaction processes between its simpler components, usual theory does not propose the real interaction problem solution, but uses its *replacement* by a simplified, "integrable" problem solution, with the poorly justified hope that the latter is similar to the former.

We start our analysis of the *universal science of complexity* [1-14] by showing that this is *not* true, because the unreduced interaction problem solution provides a well-specified *qualitative extension* of usual theory, including the intrinsic origin of *irreversibly flowing time*, *uneven change/events* and *purposeful evolution* of the *causally emerging* structure. These key features, critically missing in the framework of standard theory, can therefore be rigorously derived by the unreduced interaction analysis, giving rise to the *qualitatively extended* framework of the new *mathematics of complexity* [1,2,6,9-11,14,15] with its *intrinsic teleology* (of real system dynamics) appearing at various complexity levels, from simplest physical systems to consciousness and civilisation development.

This qualitative extension of interaction problem solution takes the form of its *fundamental dynamic multivaluedness, or redundance*, specified as the existence of *many different, mutually incompatible*, but *equally real* problem solutions, each of them being equivalent to the *unique* solution of usual theory [1-14]. These mutually incompatible solutions, called sys-

tem *realisations*, are forced then to permanently replace each other in *causally random* order thus defined, revealing the well-specified *dynamic origin of (any) probability*, *irreversibly flowing time* and explicit *structure emergence*. The discovered *dynamic instability* of *any* real structure is qualitatively different from respective imitations of usual, *dynamically single-valued*, or *unitary*, theory, where different states ("multistability") or trajectory configurations ("basins of attraction") along formal-time evolution of its *unique* solution are but *coexisting* structures of this single solution, which do not give rise to genuine randomness, system change and real time flow.

We can illustrate the origin of this qualitative novelty by a system of equations describing an arbitrary real interaction between different modes, $\psi_n(\xi)$, of system components (although being universally confirmed [1-13], details of the form are not important here):

$$\left[h_0(\xi)+V_{nn}(\xi)\right]\psi_n(\xi)+\sum_{n'\neq n}V_{nn'}(\xi)\psi_{n'}(\xi)=\eta_n\psi_n(\xi), \tag{1}$$

where ξ is a common degree of freedom, $h_0(\xi)$ the one-mode integrable Hamiltonian operator, η_n the eigenvalue to be found, and matrix elements $V_{nn'}(\xi)$ express interactions between each two system modes.

As the system (1) for arbitrary interaction cannot be directly solved, usual theory uses various approximations reduced to its replacement by "mean-field" equations,

$$\left[h_0(\xi)+V_{nn}(\xi)+\tilde{V}_n(\xi)\right]\psi_n(\xi)=\eta_n\psi_n(\xi), \tag{2}$$

where the mean-field potential $\tilde{V}_n(\xi)$ is an "average" result of other mode influences on a given mode $\psi_n(\xi)$. This simplified kind of equation can be explicitly solved as a trivial extension of the integrable one-mode problem, $h_0(\xi)\psi_n(\xi)=\eta_n\psi_n(\xi)$. It is then assumed that the unreduced problem, eqs. (1), can be successfully approximated, or at least qualitatively modelled, by the integrable version of eq. (2), where details of interest can be adjusted by parameter variation and computer simulation procedures. As a result, one obtains a simple, closed-form solution to a problem lacking, however, some important features, such as explicit structure emergence and irreversible time flow of any purposeful evolution.

We show that this major assumption of conventional theory is fundamentally wrong, since the unreduced problem solution possesses a *new quality*, the above dynamic multivaluedness, which explains all deep deviations of usual "mindless" and "timeless" framework of dynamically single-valued theory from the observed reality quite correctly described by the unreduced, dynamically multivalued solution [1-13]. We use the *generalised effective potential (EP) method*, extending its standard version, where the substitution of variables in search of the unreduced solution of eqs. (1) transfers all the complicated effects of emerging interaction chains and loops into the EP structure within an externally simple equation similar to eq. (2), but without any reduction of the EP "mean-field" itself:

$$\left[h_0(\xi)+V_{\text{eff}}(\xi;\eta)\right]\psi_0(\xi)=\eta\psi_0(\xi)\ , \tag{3}$$

$$V_{\text{eff}}(\xi;\eta)=V_{00}(\xi)+\hat{V}(\xi;\eta)\,,\ \hat{V}(\xi;\eta)\psi_0(\xi)=\int\limits_{\Omega_\xi}d\xi' V(\xi,\xi';\eta)\psi_0(\xi')\,, \tag{4a}$$

$$V(\xi,\xi';\eta) \equiv \sum_{n,i} \frac{V_{0n}(\xi)\psi^0_{ni}(\xi)V_{n0}(\xi')\psi^{0*}_{ni}(\xi')}{\eta - \eta^0_{ni} - \varepsilon_{n0}}, \ \varepsilon_{n0} \equiv \varepsilon_n - \varepsilon_0 , \tag{4b}$$

where $V_{\text{eff}}(\xi;\eta)$ is the unreduced EP operator, $n>0$, $\{\varepsilon_n\}$ are the interacting component eigenvalues, $\eta \equiv \eta_0$, and $\{\psi^0_{ni}(\xi)\}$, $\{\eta^0_{ni}\}$ are the eigenfunctions and eigenvalues of a truncated system of equations obtained as the system (1) without the equation for $\psi_0(\xi)$:

$$\left[h_0(\xi) + V_{nn}(\xi)\right]\psi_n(\xi) + \sum_{n' \neq n} V_{nn'}(\xi)\psi_{n'}(\xi) = \eta_n \psi_n(\xi), \quad n, n' > 0 . \tag{5}$$

It is the nonlinear multibranch dependence of the unreduced EP (4) on the eigenvalues η to be found that gives rise to dynamic multivaluedness, since the number of eigen-solutions of the effective interaction equation (3) determined by the highest power of the characteristic equation consists of $N_{\Re} = N_{\xi}$ sets of ordinary, *regular* system configurations, or *realisations* (where N_{ξ} is the number of terms in the sum over i in eq. (4b) determined by the number of system eigenmode combinations), and one smaller set for a special, intermediate realisation of the *generalised wavefunction, or distribution function*, serving as the transitional state in permanent system "leaps" between its regular realisations [1-13]. This result is confirmed by the graphic analysis [1,5] and simple physical arguments.

Since the total system state-function and measured density contain, in the unreduced problem solution, the finely structured *dynamic entanglement* of interacting modes (or degrees of freedom), one obtains the *dynamically multivalued entanglement* as the main result of the unreduced interaction process, where the interacting degrees of freedom dynamically entangle within each emerging realisation, then disentangle during system transition to the next realisation through the generalised wavefunction state with transiently vanishing effective interaction, then re-entangle in the new realisation configuration, and so on [1,2,7-13]. Further development of the unreduced solution by application of the same EP method to the truncated system (5) and the resulting finite series of ever more truncated systems reveals the multilevel structure of the multivalued dynamic entanglement in the form of *dynamically probabilistic fractal*, which provides the *mathematically exact expression* of the *real material quality* (texture) of the emerging structure and its permanently probabilistically changing, "living" character (instead of "immaterial" abstract entities in usual models). This *universal structure* of dynamically probabilistic fractal describes the unreduced interaction result for both any particular system and the entire universe, thus essentially extending the notion of usual, abstract-mathematical and regular fractals [1,2,6-13].

We obtain rigorous notions of *emergent, multilevel, dynamically discrete space*, whose real "points" and "length elements", Δx, emerge as inhomogeneous structure ("size") of individual realisations and neighbouring realisation separation (measured by respective eigenvalue separations for the effective interaction equation (3)-(4)), and related *irreversibly flowing time*, directly produced by *permanent realisation change* (due to universal dynamic multivaluedness) and measured by its *intensity* expressed as realisation change *frequency*, $\nu = 1/\tau$, with the (characteristic) period $\tau = \Delta t$ determining the real time increment Δt [1-3,6-8]. The latter can also be found as $\Delta t = \Delta x/\upsilon_0$, where υ_0 is the velocity of perturbation propagation in the material of interacting components.

This *universal origin of real time* and *emerging structure (space)* provides the basic features of the *intrinsically teleological* character of the unreduced mathematics of complexity, due to the *key property* of dynamic multivaluedness of the unreduced problem solution leading to the naturally irreversible time flow (because of the *truly random* choice of each next realisation). It is also clear why the usual, *dynamically single-valued* mathematical framework, missing the unreduced, dynamically multivalued problem solution, *cannot* provide the real time flow, emergence and intention, irrespective of technical details.

We emphasize the fundamental involvement of *genuine dynamic randomness*, universally provided by the dynamically multivalued solution, with the *naturally irreversible time flow*, in contrast to the opposite idea of the intrinsic regularity of time, inevitably dominating in unitary science framework. This key feature of causal randomness within *any* real interaction process, system structure and dynamics is supported by the rigorously derived notion and value of *dynamic probability*, α_r, of (r-th) realisation emergence [1-14]:

$$\alpha_r = \frac{N_r}{N_{\Re}} \quad \left(N_r = 1,...,N_{\Re};\ \sum_r N_r = N_{\Re} \right), \quad \sum_r \alpha_r = 1 \ , \tag{6}$$

where $N_{\Re}$ is the total number of elementary realisations and N_r the number of elementary realisations grouped within the r-th actually observed, compound realisation (which is the unified self-organisation mechanism, see below). Due to the direct dynamic connection of each emerging realisation with the intermediate realisation of the wavefunction (or distribution function) $\Psi(x)$, we obtain also the *generalised Born rule* relating realisation probability to respective wavefunction value, $\alpha_r = |\Psi(x_r)|^2$ (for wave-like complexity levels) or $\alpha_r = \Psi(x_r)$ (for particle-like levels).

The described emergent and chaotically changing character of any real system structure is reflected in the *general solution of the unreduced interaction problem* in the form of *dynamically probabilistic sum* over all system realisations for the measured system density $\rho(x)$ (determined by the state-function found by the unreduced EP formalism (3)-(5)) [1-13]:

$$\rho(x) = \sum_{r=1}^{N_{\Re}} \oplus \rho_r(x) \ , \tag{7}$$

where $x = \{\xi, q_1, q_2, ..., q_n\}$ is the set of all interacting degrees of freedom, dynamically entangled in the emerging compound degree of freedom x, and the sign $\oplus$ marks the special, dynamically probabilistic meaning of the sum implying that individual realisation contributions $\rho_r(x)$ appear probabilistically, with *dynamic* probabilities α_r of eqs. (6) and the Born rule, so that the observed quantity $\rho(x)$ is a probabilistically fluctuating function.

For long enough observation times, the dynamically probabilistic sum of eq. (7) tends to the familiar expectation value of the measured quantity, $\rho_{\text{ex}}(x)$:

$$\rho_{\text{ex}}(x) = \sum_{r=1}^{N_{\Re}} \alpha_r \rho_r(x) . \tag{8}$$

However, contrary to this *statistical* description, the single one possible in the unitary theory (also extended now to the *dynamically determined* randomness and probabilities), our

general unreduced solution (7) deals with *individual events* of realisation emergence in dynamically random order and remains valid (rigorously predictive) before any event happens at all. Taking into account the above multilevel, probabilistically fractal structure of the complete solution, the sums in eqs. (7), (8) should be understood as respective multilevel constructions:

$$\rho(x) = \sum_{j=1}^{N_{\rm f}} \sum_{r=1}^{N_{\Re j}}{}^{\oplus} \rho_{jr}(x) \ , \tag{9a}$$

$$\rho_{\rm ex}(x) = \sum_{j=1}^{N_{\rm f}} \sum_{r=1}^{N_{\Re j}} \alpha_{jr} \rho_{jr}(x) \ , \tag{9b}$$

where $\rho_{jr}(x)$ is the measured quantity for the *r*-th realisation at the *j*-th level of the probabilistic fractal, $N_{\Re j}$ is the number of realisations at the *j*-th level, and $N_{\rm f}$ the final or desired level number. Since the dynamically probabilistic fractal is the unified expression of the structure of reality on any scale, eq. (9a) can be considered as the causally complete expression of the world structure, for any its level, system, and in the whole, obtained as the unreduced interaction problem solution [1,2,6-13].

We can now provide the *universal definition* of *dynamic complexity* C of any real structure or process, in the form of any growing function of the number of system realisations $N_{\Re}$ or rate of their change, equal to zero for the (unrealistic) case of only one realisation (exclusively considered in the usual theory framework, including its imitations of complexity):

$$C = C(N_{\Re}) \ , \ dC/dN_{\Re} > 0 \ , \ C(1) = 0 \ . \tag{10}$$

Examples of *integral* complexity measures include $C(N_{\Re}) = C_0 \ln N_{\Re}$, $C(N_{\Re}) = C_0 (N_{\Re} - 1)$, generalised action-complexity and entropy-complexity (see below), while *differential* complexity measures include generalised energy-mass (temporal rate of realisation change) and momentum (spatial rate of realisation emergence) [1-14]. Thus defined complexity contains equally *universally defined genuine dynamic randomness*, or *chaos*.

Based on the probabilistically fractal problem solution (9), our universal complexity concept includes both *purposeful changes* (evolution) in real time and *all "intelligent" nuances of any complicated "sense"*, up to the highest creations of human mind and beyond, now provided with causally complete, objective measures and description (see also below) [1,2,8-13]. This is the key difference of universal dynamic complexity (10) from complexity imitations in unitary theory.

The related basic feature and difference from complexity ideas in unitary science is that in our description *any* real structure, process or object, starting from a massive elementary particle, has a *positive (and actually high) value of unreduced dynamic complexity* (10), as opposed to ambiguously defined special class of "complex systems" in usual theory (insisting also on the *absence* of a single, universal and consistent complexity definition).

We explain, in particular, that any kind of externally "rigid" and "regular" structure and behaviour is a special limiting case of multivalued, *internally chaotic* dynamics called *dynami-*

cally multivalued SOC (self-organised criticality) because in this case the system contains many different, but similar realisations producing only small, but fundamentally important chaotic fluctuations. Various cases of more or less regular behaviour separated in usual theory are now essentially extended and *intrinsically unified* within this dynamically multivalued SOC regime, including all versions of self-organisation, self-organised criticality, synergetics, control of chaos, any control dynamics, synchronisation, mode locking, and various attractors. The opposite limiting regime of *global, or uniform chaos*, emerges in the case of sufficiently different realisations whose change in dynamically random order gives the explicit impression of chaos. We obtain the criteria of global and partial chaos onset (at major frequency resonances) and the opposite regime of external "regularity" (multivalued SOC), while *all* dynamic regimes vary between those limiting cases and criteria, which provides their *unified classification* [1,2,4,6-8,10,14].

In order to specify interaction complexity development on a global scale, note that the *total dynamic complexity* C of a closed system, as defined by eqs. (10), is *conserved*, since it is determined by the initial system configuration (through the total realisation number $N_{\Re}$ depending on the interacting mode combination number). However, something *should* change during interaction development (structure formation) process, and this change can be specified as permanent *transformation* of the initial, potential (latent) form of dynamic complexity, or *dynamic information* (specifying *intentions*), I, to the final, unfolded form of *dynamic entropy* (specifying *purposes*), S, so that their sum, total complexity C, remains unchanged: $C = I + S$, $\Delta C = 0$, $\Delta S = -\Delta I > 0$ [1-3,6-8,10-13].

This rigorously substantiated law of *conservation and transformation, or symmetry, of complexity* can be further specified by noting that the latent complexity form of dynamic information I can be associated with the *universal extension of mechanical action* $\mathcal{A}$ appearing now as a major integral measure of complexity [1-3,6-8,10-13]. As the real *space* and irreversibly flowing *time*, the two elementary *forms of complexity*, emerge in the sequence of chaotically changing realisations determining space and time increments, Δx and Δt (see above), their simplest linear combination in the quantity of *action-complexity* $\mathcal{A}$ provides a unified *integral* complexity measure:

$$\Delta\mathcal{A} = p\Delta x - E\Delta t, \tag{11}$$

where the coefficients, p and E, are recognised as the system *momentum* and *total energy* now extended to universal *differential* complexity measures:

$$p = \frac{\Delta\mathcal{A}}{\Delta x}\Big|_{t=\text{const}}, \tag{12}$$

$$E = -\frac{\Delta\mathcal{A}}{\Delta t}\Big|_{x=\text{const}}, \tag{13}$$

with *dynamically defined* values of increments and x, p generally understood as vectors.

Since action-complexity $\mathcal{A}$ is a permanently decreasing quantity ($E, \Delta t > 0$ in eq. (13)), we can definitely associate this universal complexity measure with equally decreasing dynamic information, $I = \mathcal{A}$, whereupon the *universal symmetry (conservation and transformation) of complexity* can be presented as unstoppable and irreversible transformation of

action-complexity $\mathcal{A}$ (specifying *intentions*) to entropy-complexity, or dynamic entropy S (specifying *purposes*), which preserves their sum, the total system complexity C:

$$C = \mathcal{A} + S = \text{const}\,, \tag{14a}$$

$$\Delta S = -\Delta \mathcal{A} > 0\ . \tag{14b}$$

We obtain thus the *explicitly teleological* and totally *universal law of any real system evolution and (complex) dynamics*, in the form of the universal symmetry of complexity (14), which unifies the extended, universal versions of the first and second laws of thermodynamics (the latter being *equivalent* now to the *extended principle of minimum action-complexity*) and actually all other (correct) laws and principles [1-3,6-8,10-14]. As a result, the *unified world structure* of dynamically probabilistic fractal (9) behaves according to the *unified law* of the universal symmetry of complexity, with the naturally included and rigorously specified *purposeful development* (in the direction of growing unreduced entropy-complexity, $\Delta S > 0$, now for *any* kind of structure or process), its unreduced complex-dynamical *intention* $\mathcal{A}$, *sense* or *meaning* S, and their *balance* C.

Unlike usual symmetries and conservation laws, the universal symmetry of complexity is naturally unified with its conservation (and transformation) law due to its *dynamic* origin: it is the identity of a system just following its dynamics and evolution. As the latter are naturally irregular, the symmetry of complexity is free from the mechanistic self-similarity of abstract, regular shapes, but remains *always exact and unbroken*, as opposed to so many cases of "spontaneously broken" unitary symmetries (as if those symmetries exist and do not exist at the same time).

The omnipresent dynamic randomness of chaotically changing realisations provides the *essential extension of the content and meaning of the entropy growth law*, which unlike its usual version implies now that *any*, more or less regular, structure creation corresponds to *growing* entropy-complexity, even in a closed system (instead of entropy decrease implied in usual theory for emerging visible order, with the idea of "entropy consumed by the environment" to satisfy the entropy growth law). It is this fundamental extension of the entropy growth law that provides the intrinsic teleology of the universal symmetry of complexity (14) with the practically important meaning, since now it is not only explicit degradation, but also *emergence* of any new, however sophisticated structure which realises the *intrinsic purpose* of complexity development from action-complexity of interaction potentialities to entropy-complexity of emerging structures (e. g. any *knowledge* or usual "information").

In the case of gradual complexity development within a narrow group of sublevels one can use the *differential* expression of the same unified law (14), in the form of the *generalised Hamilton-Jacobi equation* for action-complexity $\mathcal{A} = \mathcal{A}(x,t)$, obtained by division of eq. (14b) by the *dynamic* time increment $\Delta t\big|_{x=\text{const}}$:

$$\frac{\Delta \mathcal{A}}{\Delta t}\Big|_{x=\text{const}} + H\left(x, \frac{\Delta \mathcal{A}}{\Delta x}\Big|_{t=\text{const}}, t\right) = 0\ ,\quad H = E > 0\ , \tag{15}$$

where the *generalised Hamiltonian*, $H = H(x,p,t)$, is *rigorously defined* as the differential expression of the unfolded, *entropic* complexity form, $H = (\Delta S/\Delta t)\big|_{x=\text{const}}$, in accord with the above definitions of generalised energy E, eq. (13), and momentum p, eq. (12). Here

the *dynamically derived arrow of time in the differential form*, $H, E > 0$, defines again the *intrinsic purpose* of *entropy-complexity growth*. We show that the universal formalism of this generalised Hamilton-Jacobi equation and the associated generalised Schrödinger equation for the generalised wavefunction, together with the unreduced EP method for their solution, is the unified extension of all known (correct) dynamic equations [1-3,6-8,10-13], in accord with the universality of the underlying symmetry of complexity. While this *unified Hamilton-Schrödinger formalism* is applicable at *any* complexity level, its familiar equations at lower, "physical" levels are provided now with the extended, causally complete meaning and solution method.

Teleological mathematics of complexity and its unlimited applications

We can now summarise the obtained *teleological features* of the *new mathematics of complexity* [1,2,6,9-11,14,15] derived from the unreduced interaction problem solution:

(i) *Real, irreversible time flow* due to the permanent change in *dynamically random* order of *mutually incompatible* system realisations explicitly obtained as the unreduced, *dynamically multivalued* solution of arbitrary interaction problem.

(ii) The *universal direction of any system evolution* (global time arrow or *purpose*) from decreasing action-complexity $\mathcal{A}$ to increasing entropy-complexity S (with their constant sum of total complexity $C(N_{\Re}) = \mathcal{A} + S$), for *any* kind of structure.

(iii) Multilevel *dynamic entanglement* of interacting components into probabilistically fractal structure, which provides, together with (ii), the *unified teleological character of real system dynamics* moving towards its replete structure (the *purpose* of *maximum entropy-complexity* S) and *rigorously* explains efficient *purposeful behaviour* of living, intelligent, and conscious systems (now causally understood). *Intentions* are specified as the potential complexity form of *action-complexity* $\mathcal{A} = \mathcal{A}(x,t)$.

These features have been specified and confirmed within a wide range of applications, from the elementary particle origin and dynamics to the highest complexity levels of consciousness and civilisation development [1-15]. We explicitly obtain the unified complex-dynamic origin of not only real world structures and dynamical laws of their behaviour, but also of all "intrinsic" properties (like relativistic mass-energy or electric charge). *No* structure, feature, property, or law is imposed ("postulated") per se in our *intrinsically teleological* description, but is *consistently derived* as a *dynamic* result of the underlying interaction process with the simplest initial configuration.

The most fundamental world entities and structures explicitly emerge as the lowest complexity sublevels in the unreduced interaction process with the simplest configuration of two initially homogeneous protofields uniformly attracted to each other [1,6-8]. We obtain the *totally unified* and *causally complete* picture of major elementary particles (in the form of complex-dynamical quantum beat processes), their fundamental interactions, intrinsic properties, quantum and relativistic behaviour (now emerging as *naturally unified* manifestations of the underlying complex interaction dynamics). The related *complex-dynamic cosmology* avoids persisting contradictions of unitary theory and resolves the problems of dark mass and energy [6-8]. We then provide causally complete solutions to the problems

of higher complexity sublevels of *(now genuine) quantum chaos*, *quantum measurement* and *purely dynamic classicality emergence* in elementary bound, *closed* systems like atoms, without any ambiguous decoherence by the environment [1,5-8].

Even more interesting manifestations of the naturally teleological dynamics of unreduced real-system interactions are found at *superior complexity levels* of *living, intelligent, and conscious organisms and artificial systems*, as well as their unreduced interactions in encompassing ecological and social systems [1,2,8-13]. We specify respective levels of complexity and reveal the complex-dynamic, interaction-driven origin of special, "magic" properties of life and intelligence as the *exponentially huge efficiency* of the multivalued dynamics of dynamically probabilistic fractal [2,8-12]. We finally obtain the rigorously specified notions and dynamics of superior levels of *ethics*, *aesthetics*, and *spiritual activity* usually studied in highly indefinite and subjective fields of unitary knowledge [1]. There are *no limits* to the level of rigorously specified dynamic complexity in this ultimately extended and intrinsically unified science paradigm.

The ultimately complicated result of the global system of interacting structures, purposes and intentions emerges in the form of modern "overcritical" and catastrophically globalised *civilisation development* above the invisible, but well-specified *complexity threshold*, where the *causally complete, objectively correct understanding* of this global development is the *necessary* condition of further progress, with the only alternative of rapid degradation (as opposed to previous epochs of uneven, but *spontaneous* development possibility) [1,2,8,13,15]. We provide the complex-dynamic theory of civilisation development and demonstrate the *urgency* of the unprecedented *transition to the superior complexity level of civilisation (and consciousness) development*, with respective superior purposes and well-specified ways of their realisation [1,2,13]. The transition from usual incomplete, separated and abstract models of unitary science to the explicitly extended, intrinsically complete picture of dynamically multivalued science of complexity (as a result of unreduced description of real interaction processes) is an integral, major part of that global *complexity transition*, or *revolution*, providing today's *inevitably* "saturated" and increasingly inefficient unitary science with the well-specified upgrade and revival of the natural leading role of science in global civilisation development, now at the necessary superior level of causally complete and totally unified knowledge [1,13,15].

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