ONTOΣ II: Volitional Ontology of Adaptivity and a New Paradigm of Control

Max Barzenkov

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Introduction

Once, while playing with a dog, I threw it a bright toy. And while the dog was running after it, I realized that if we looked at the movement in slow motion, then the whole frame-by-frame sequence of the motion would already determine the trajectory along which the ball would fly. That is, the trajectory of the ball is already known at the moment the act of “throwing” occurs. And no matter how many times I throw it, under identical conditions it will fly in exactly the same way. This means that the will of its movement was set even before the action itself began. I wondered: where, in such episodes, does the “intention” or “will” appear that sets the path for the body? Great philosophers have given very different views on this problem — from Aristotle, who spoke of the shortest path “by nature”, to Schopenhauer, who saw in the world a blind will as “thing in itself”, or to Nietzsche’s motive of greedy will. But no classical model gave a complete explanation of how, in a non-uniform and dynamic world, stable trajectories and adaptive behavior arise.

This description introduces us to the problem of will as a fundamental ontological origin. We postulate that there exists a will (W) — a transcendent operator of directedness that precedes any structure and action. In other words, will sets the “impulse” to being, from which stable forms and concrete actions then arise (we call this the UTAM axiom: W → E → A, “Will generates structure, structure defines action”). Thanks to this view, any goal-directed

processes in nature and technology can be explained through a basic pattern: first an impulse arises, then it is interpreted by the system, and finally a coherent action is constructed. In our treatise we will show that it is precisely THIS “Will” as an ontological operator, passing through the functional of the system’s internal conflict, that is universally realized in a multitude of examples — from the neural networks of the brain to the principle of least action in the Universe.

Volitional Ontology and the UTAM Axiom

At the core of the concept lies the idea of the primacy of will. Will (W) is understood here not as a personal desire or intention, but as the first principle of being — a non-material “strategist” that sets the direction of development. This is a metaphysical analogue of Schopenhauer and Bergson, but in our case will is neither blind nor limited to life: it sets the vector at the deepest level. Our origins are diametrically opposed. Will manifests itself in the world through structures — structure (E) — be it physical laws, biological organizations, or speculative models. These structures then determine concrete actions (A): the local manifestations of Will. Taken together, we obtain the UTAM triad — W → E → A, “will generates structure, and structure defines action”.

Primacy of Will (W). There exists a fundamental ontological operator of directedness (will) that precedes any concrete form or event. Will sets the “impulse” of development; it precedes the existence of matter or energy.

Mediation through Structure (E). Will never appears “pure” on stage, but always expresses itself through structures — ordered configurations of matter, energy, information, or social ties. Structure turns impersonal will into concrete possibilities.

Actualization as Action (A). Each action is a structure unfolding in time; it is the manifestation of will through a given structure. In other words, action does not arise “from nowhere”, but is conditioned by the structures that were constructed by will.

In the presentation of UTAM: will sets directedness, structure embodies it, action realizes it. This axiom, known as the Law of Volitional Embedding, means that any adaptive system acts within the condition of the senior structure of the environment: its will must always be inscribed into the immutable natural laws. For example, planets move along orbits predetermined by the laws of gravity — this is the embodiment of the will of stars (energy) into structure (orbit), which sets the motion.

Will here is not identical to personal willpower and is not equated with God — it is an impersonal vector present in the fabric of reality itself. It is laid at the beginning of any process (similar to Bergson's "élan vital") and provides teleology: an organizedness of progressive development without causal predetermination of the goal.

The IIC Pattern (Impulse–Interpretation–Coherence) and the Drift→ΔE Architecture

Any adaptive system acting in changing conditions demonstrates three stages of behavior: Impulse → Interpretation → Coherence. First, an external signal (impulse) enters the system, then internal mechanisms interpret and evaluate it, and then an action is performed aimed at aligning the internal model with reality. This IIC pattern ("Impulse–Interpretation–Coherence") is universal: we see it in the work of the brain, the immune system, technical systems, etc. — everywhere an irritant first appears, then it is processed, and only then does the system "synchronize" with the world through an appropriate action. The sequence is linear and unbreakable. These levels will never catch up with each other; there will always be a gap between them for a phase "jump".

However, the world is unpredictable: the structure of the environment can drift, and the internal models of agents may fail to adapt in time. UTAM predicts: under such conditions the Drift Law arises. If the external structure changes faster than the system updates its model, coherence falls, and drift (divergence from the model) steadily grows. Formally: in a non-stationary environment with a fixed model, convergence tends to zero, and divergence tends to one. This is the fundamental reason why classical controllers (PID and others) collapse in

unstable systems: their goal loses meaning along the way and by the end becomes unattainable.

UTAM's and IIC's response to drift is the ΔE-architecture framework. The main principle of ΔE is to orient not to the accuracy of a pre-specified goal, but to preserving the structure of coherence of behavior inside the system. The ΔE approach does not chase a static goal, but seeks to maintain the "meaningful form" of the system even when goals recede into nowhere. Error and external accuracy are no longer the priority; the primary concern is the risk of system stratification and loss of integrity. At the same time, ΔE preserves the topology of the trajectory in the most chaotic conditions: noise, communication interruptions, changes in delays or goals do not destroy the "contour" of movement. This shifts the focus of control from "minimizing error" to "maximizing internal coherence".

Thus, will (W) manifests itself through the IIC mechanism as a ternary dynamic, and ΔE provides its engineering implementation: under the impact of drift the system maintains internal agreement of signals and a stable form of behavior.

Examples from Nature, Physics, and the Cosmos

The described pattern is manifested in very different phenomena in nature and technology. Here are some examples:

Neuronal synchronization in the brain. Conscious states are associated with global synchronous oscillations of the brain (beta and gamma ranges). The emergence of consciousness is accompanied by the formation of coherent patterns of activity between distant regions. This demonstrates IIC: first a neuronal impulse (stimulus), then its processing, and finally synchronization of networks (coherent activity) for awareness and action.

The moment of death. Strikingly, at the onset of clinical death the brain sometimes shows a spike of internal coherence. Experiments have shown an increase in the power and

synchrony of gamma rhythms after cardiac arrest. That is, the brain briefly enters a state of anomalous order, generating conscious near-death experiences even under physiological crisis conditions.

The flash at fertilization ("citrus flash"). The flash of light at fertilization can be considered a physical manifestation of IIC = 1 — maximum coherence between the egg cell and the specific sperm cell, "recognized" in advance by Will as the carrier of the optimal trajectory. This is not just a biological fact but a rare moment where empirical science intersects with the ontology of action: the structure of the future organism is as if already folded in potential, and the flash is the point of phase transition when the directedness of Will passes into realized action. Molecular biology has discovered that at fertilization of the egg there is a bright release of zinc ions — a "zinc spark". Similar to a "flash" of coordination, the sperm gives an impulse (introduction of PLC), the egg interprets it (a rise of intracellular Ca^{2+}), and the result is a sharp change of state (release of a large quantity of Zn^{2+} ions). In IIC terms we can say that the impulse of fertilization launches a cascade of interpretations (Ca oscillations), and the completion of the process is a new stable state of the zygote. Here we have a clear example of "IIC = 1": from the impulse the system transitions into a fully coherent state of the new zygote-organism, and it begins to divide.

Quantum jumps. In quantum mechanics, transitions between energy levels are instantaneous "jumps" of atomic states. One can interpret them as one of the most fundamental impulses: the system abruptly passes from one configuration to another, accompanied by emission or absorption of a photon. After the jump, the system "settles" into a new coherent state — here, too, one can see the "impulse–coordination" pattern.

Mitosis and kinetochores. In the process of cell division, each chromosome consists of two sister chromatids bound together. Microtubules form a spindle, "grasping" special structures — kinetochores on the chromatids — and tension aligns the chromosomes along the equator of the cell. Here W→E→A manifests itself so: biological will (activation of the cell

cycle control system) creates structure (the specific spindle architecture of microtubules), and in the end the action is the precise distribution of chromatids to daughter cells. If kinetochores are incorrectly attached, a conflict arises (distribution non-specificity) — an "impulse" of incorrect organization. The system activates separation checkpoints (interpretation) and achieves a new coherent structure: either the chromosomes are repositioned or division stops. In this way the cell stabilizes itself by seeking a balanced "convergence" of chromatids. Tension on the kinetochores is the maintenance of coherence of the division mechanism: up to the moment when all conditions are met, the system holds the internal goal — identity of the genome. After alignment, the spindle begins to "act" — it separates the chromatids, completing the W→E→A cycle.

Immune response. The immune system demonstrates adaptive coordination upon encountering a pathogen. The first contact (the pathogen enters the organism) is the impulse; interpretation occurs through recognizing receptors and intercellular signals; a coordination structure is formed (activation of T and B lymphocytes, their proliferation, antibody secretion); the final result is destruction of the pathogen and formation of immunological memory. Adaptive memory here serves as a "re-tuning" of the system: at the next encounter the system remembers the pattern ("structure"), instantly generating a high and coherent response (effective protection). It is after the initial contact that "memory cells" accumulate, thanks to which, upon repeated contact, an enhanced response is produced. In UTAM and IIC terms: the organism's will to survive initiates a chain of activation (the structure of the immune system) that gives rise to concrete effector actions. At the same time, immunity acts not "pointwise" but through a system of signals and feedback, maintaining coherence (including feedback from inflammation) and avoiding the "noise" of indeterminate reactions.

Protein and RNA folding. Biopolymers such as proteins or RNA are synthesized as linear chains and then spontaneously "fold" into strictly defined three-dimensional shapes minimizing free energy. The energy landscape of folding is "funnel-shaped": the protein has many folding paths, but all lead to a single native state. Here the impulse is the primary

structure (sequence of amino acids), interpretation is the search for possible conformations in the labyrinth of energy potential, and coherence is achieving a low-energy stable state. Proteins follow the “principle of minimal frustration”: evolution has optimized sequences so that folding proceeds quickly and reliably. In W→E→A terms this means: the will of the protein toward ordering (a directed structure of the seed) forms an ordering “energy structure” and achieves effect (the actual state) through transition to the basic energy level. RNA folds in a similar manner, forming functional ribozymes or interaction templates, maintaining coherent biochemical function.

Self-assembly of RNA (RNA molecule). It is assumed that in the primordial world RNA could self-replicate and evolve on its own. Scientists have constructed RNA molecules capable of catalyzing the synthesis of their complementary strands. This shows that nucleotides can form complex structures without an external “master”, directed by an internal pattern of “impulse→assembly→stable structure”.

Adaptive coherence in the Universe (gravity, formation of galaxies). On a cosmic scale, gravity organizes matter into structures: from planets to galactic clusters. The cosmos began almost homogeneous, but small density fluctuations grew under the influence of gravity and led to the formation of stars, galaxies, and clusters. Here the role of “will” is played by the initial nonuniform distribution (a coherent impulse of collapse), structure is the clusters of matter forming spiral or elliptical galaxies, and action is the accelerating growth of structures. Thus the Universe adaptively self-organizes: obeying the principle of least action (the “hard” energetic requirement to minimize action for matter trajectories), matter contracts along the “least action path” to more stable configurations. In fact, the principle of least action — the most general regularity of matter’s motion — here shows itself as a universal rule: the system evolves along a path that minimizes action. At the macro level this manifests as cosmic coherence: large structures (galaxies, clusters) correspond to the “minimum of action” for the galactic flow, and gravity itself acts as a “bridge” for coordinating the motion of matter along the path of least action.

All these examples from different domains demonstrate one and the same scheme: a deep impulse of directedness (will), realized through structure (organization of the system) and generating observable actions. In living nature this can be seen in cell cycles, nervous networks, ecosystems, and in the cosmos — in the stable trajectory of planets or the evolution of galaxies. The universality of the W→E→A principle is emphasized by the authors: regardless of whether we are talking about a psychological phenomenon, the evolution of life, or the dynamics of complex systems, we always find this three-level picture.

Engineering Comment: EVS (Engineered Vitality Systems)

From practical considerations, we propose the concept of Engineered Vitality Systems (EVS) — systems of "vitality" governed through health and flexibility. The key idea of EVS is to orient not toward the accuracy of command execution but toward preserving internal coherence and stability. In such an architecture, the control controller evaluates the non-destructibility of "structure" (invariants) rather than just minimal error. This is closer to the approach of viability theory, where the task is to maintain an admissible region (the viability kernel) under changing conditions. EVS assumes that controllers of a living type learn and adapt to errors rather than strive for instantaneous trajectory correction. For example, in standard robotics, a PID regulator stabilizes the movement of a robot, trying to annihilate deviation. In the EVS method, the system may deliberately "drift" within certain limits so as not to lose stability on new surfaces or under uncertain conditions, gradually adapting the model and maintaining coherent ties with the environment. Such control takes into account the "bandwidth" of the brain: the nervous system allows for sensor errors, focusing on the global coherence of movements. From the perspective of the ontology of adaptivity, EVS is the realization of the idea that the vitality of a system is determined not by rigid accuracy but by preserving internal connections and dynamic integrity under any changes of the environment.

Epistemological and Philosophical Comment

In its philosophical aspect, the ONTOΣ concept brings its ideas close to the philosophers of creativity and vitality. Henri Bergson considered "élan vital" — the vital impetus manifesting as the creative evolution of nature — into which we can embed our model of will as an

“impulse” toward a new order. Will, for Bergson, is not simply a motor force but the driving force of innovation, turning potentialities into acts. In this sense our volitional ontology resonates with Bergson’s views: it postulates will as the main ontological operator constituting the world in its dynamic character. However, at the same time we avoid mystical or personalistic interpretations: will in ONTOΣ is not a magical principle but a universal dynamics. Will is understood as the primary operator of being that sets the direction of the system’s development, which distinguishes us from, for instance, religious conceptions of will as a property of God or a mystical factor. Our approach is closer to a metaphysics of inventiveness, where any goal is the result of a systemic design inside the structure of the world.

Let us emphasize the difference from a purely deterministic view: determinism would see any event as the consequence of a preceding state and physical laws. Volitional ontology offers a different perspective — the transition from blind cause-and-effect determinism to directedness: each element of the system has an “intention” toward self-realization through configuration. The similarity with the works of Bergson and Nietzsche lies in the fact that they saw reality as constant “becoming” and “becoming of force” rather than static existence. We add here the notions of coherence and the mathematical description of Drift→ΔE, anticipating a possible formalized development of the idea.

Formally one can say that we treat will as an “ontological operator” — not an external agent but a law of measuring actions in essence. This recalls philosophical ideas of Hilbert (where Lagrangian and Hamiltonian principles are introduced through variation of action) and ideas of engineering foresight: will is not simple randomness but an algorithm for synchronizing part and whole. Compared to the religious approach (where the will of God or a human is endowed with special qualities), our view is pragmatic: will is above all a principle of organization that does not require personification.

Will, Breathing, and Local Resistance to Directedness

It is noteworthy that the human body contains a natural example of how Will and structure can enter a phase conflict, producing local resistance to global directedness. Practices such as Wim Hof breathing demonstrate this with particular clarity. During a voluntary breath hold, the limbic system generates strong automatic impulses — "breathe", "break the cycle", "restore the CO_2–O_2 balance". This is the reaction of older biological structures whose task is immediate survival. At the same time, the prefrontal cortex maintains the opposite vector: continue the practice, preserve the form of action, do not respond to local impulses.

In UTAM terms we observe a clean three-level dynamic. The limbic system produces an impulse (I), the body interprets the physiological imbalance (I), and then consciousness seeks a way to maintain coherent action (C) despite the rising drift between the levels. What we usually perceive as "the body resisting" is not anti-will. On the contrary, it is a natural mechanism of structure attempting to protect its own local integrity. The global directedness of Will and the local biological invariants temporarily diverge, forming a phase conflict that consciousness attempts to resolve in favor of the higher vector W.

This reveals an important principle of volitional ontology: **a system may temporarily resist the directedness of Will, but it does so not to deny it — rather to preserve its own structural consistency.** Here, consciousness acts as the interface between global directedness and local mechanisms, a tool through which structure begins to recognize its own Will. Practices like Wim Hof breathing thus become a living Drift→ΔE experiment on a biological substrate: the limbic system produces drift, the cortex maintains coherence, and the entire system searches for a stable form of action under a conflict of levels.

Conclusion

We have constructed an ontology in which will precedes matter and energy and acts as an operator of directedness. Thanks to this approach, a universal pattern has been found: Impulse–Interpretation–Coherence, expressed through the chain **W→E→A**, which manifests itself in practically all complex systems of nature and technology. The **Drift→ΔE** architecture

illustrates how to preserve this internal volitional harmony under conditions of real drift of the environment.

Thus, a foundation is presented for a new type of control systems and a new ontology of action. In contrast to traditional control models (relying on predefined goals and determinism), this approach recognizes the key role of will and coordination: it describes systems that do not simply “track the goal better” but are able to “hold together” during chaos. This opens perspectives for creating autonomous “vitality systems” (Engineered Vitality Systems) capable of adapting and preserving integrity under unforeseen environmental changes.

So far, no other theory unites so many aspects: from the deep teleology of Being to practical control architectures. That is why ONTOΣ, with its volitional pattern and ΔE architecture, can become the foundation of a universal adaptive paradigm of the future.

Only one question concerns me. If we follow the logic of my ontology of Will, then everything comes down to the preordained unfolding of structure: every element of the future form is already given in potential state. In this sense, any current moment is merely a trigger, a phase transition from directedness to action, when Will acquires form in physical expression. Reality is not created — it is unfolded, like a trajectory pre-folded in advance. Like a protein structure… And what if…? I will leave this question open for now.

MxBv, Poznań, Poland.
Navigational Cybernetics 2.5 (MxBv)