VERTICAL STRUCTURES AND COHERENCE: ARCHITECTURAL TYPOLOGY IN ODTOE FORMALISM

Pankratov Anton Sergeevich

Independent researcher, Kazan, Russia

E-mail: anton.s.pankratov@gmail.com
ORCID: 0009-0002-4870-2995

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ABSTRACT

Within the ODTOE (Observer-Dependent Theory of Everything) formalism, we analyze vertical architectural structures of modern civilization as geometric realizations of operators governing interaction between the field of potential states and actualized configuration. We demonstrate that classical pyramidal structures close the self-observation cycle $\Phi = \iota \circ \hat{O}$ and synchronize all four components of the coherence vector $B = F^w \cdot E^w \cdot (1-\sigma)^w \cdot \Lambda^w$. Modern towers and antennas — the Ostankino television tower, engineering structures, cellular transmission towers, and skyscrapers — either break the cycle closure or fragment coherence structurally and functionally. Broadcasting towers create a gap between apparent and true coherence $S_{\text{apparent}} \gg S_{\text{true}}$. Cellular networks fragment all four vector components, causing catastrophic coherence degradation and generating incompatible realities for different observers. Skyscrapers increase observer density without ensuring coherent architecture, severing connection to the historical field. We formulate the law of coherent architecture: a structure increases true coherence if and only if it synchronizes all four components of B, closes the self-observation cycle through the immersion operator, preserves connection to the historical field, and does not replace direct experience with virtual substitutes. The civilizational vector moves monotonically from pyramids (configuration lifetime $T(C) \sim$ millennia) to cellular networks ($T(C) \sim$ months), describing degradation of coherent architecture in modern civilization.

Keywords: ODTOE, coherence, pyramid, architecture, tower, antenna, broadcasting, cellular network, skyscraper, self-observation, information noise, architectural typology.

I. PROBLEM STATEMENT AND PRELIMINARY RESULTS

In previous ODTOE analysis works, the following main results have been established [1, 3]:

- The pyramid $\triangle$ as a geometric realization of the actualization operator $\hat{O} : H \to C$, which maps the infinite-dimensional field of potential states into a specific observer configuration
- The inverted pyramid ∇ as the immersion operator $\iota : C \to H$, which closes the self-observation cycle

- The dyadic composition $\triangle\nabla$ as the complete cycle $\Phi = \iota \circ \hat{O}$, providing a closed strange loop [3] and the existence of a fixed point Ψ^*

The central question of this study: how do modern vertical structures — broadcasting towers, engineering structures, cellular antennas, skyscrapers — affect the coherence of the observer system?

The answer requires a detailed analysis of the impact of each structure type on the four components of the coherence vector [1]:

$$B = F^w \cdot E^w \cdot (1 - \sigma)^w \cdot \Lambda^w \tag{1}$$

where F is the focus of attention, E is emotional synchronization, $(1 - \sigma)$ is the measure of consistency, and Λ is the empirical reinforcement of experience.

II. FUNDAMENTAL GEOMETRIC DISTINCTION: PYRAMID AND TOWER

2.1. Pyramidal geometry: convergence of multiplicity to unity

The geometry of the pyramid embodies the principle of convergence [5]: a broad base containing a multitude of potential states $\Psi \in H$ converges to a single apex — the point of actualization $R \in C$. This geometry realizes the formal mapping:

$$\hat{O}(\Psi): \quad R = \hat{O}(\Psi) \tag{2}$$

where the infinite-dimensional field collapses into a specific observable configuration. The four lateral faces of the pyramid correspond to the four components of the vector B. Its structural closure — no face can be removed without destroying the whole — reflects the multiplicative property of coherence: zeroing even one component zeroes B entirely.

2.2. Tower geometry: divergence of singularity to multiplicity

The geometry of the tower realizes the opposite principle of divergence: a narrow base extends upward in height, with the apex radiating or dispersing energy to a multitude of receivers. Mathematically:

$$\text{Tower}: \quad \text{transmitter point } R_0 \rightarrow \text{distribution to a multitude } \{O_1, O_2, \ldots, O_n\} \tag{3}$$

This is neither actualization from the field nor immersion back into it, but rather translation — forced copying of one configuration into the archetypes of multiple observers [11].

2.3. The translation operator in the extended ODTOE formalism

We introduce the translation operator $\hat{T}$, which acts on the focus archetype:

$$\hat{T} : A_0 \to \{A_1 := A_0, A_2 := A_0, \ldots, A_n := A_0\} \tag{4}$$

The operator $\hat{T}$ acts on one component of the observer vector $O_i = (B_i, A_i, H_i)$ and is effective in one direction only: the observer cannot influence the transmitted archetype A_0.

2.4. Comparative table: structural distinction

Characteristic	**Pyramid** $\triangle$	**Tower** $\uparrow$
Geometry	Convergent ($\infty \to 1$)	Divergent ($1 \to \infty$)
Operator	$\hat{O} : H \to C$ (actualization)	$\hat{T} : A_0 \to \{A_i\}$ (translation)
Flow direction	Field $\to$ configuration	Configuration $\to$ multitude of observers
Feedback	Present through ι	Absent (unidirectional action)
Reality synthesis	Organic coordination	Forced archetype unification
Historical field	Preserved and enriched	Ignored or substituted

III. BROADCASTING TOWER: FORCED SYNCHRONIZATION WITH FEEDBACK BLOCKADE

3.1. Structural and functional analysis

The Ostankino television tower (height 540.1 m) performs a broadcasting function, transforming a single programming content into simultaneous transmission for approximately 15 million observers within the coverage area [11]. Geometrically, it represents a minimized base and a maximized height with a radiating apex.

In ODTOE terms, the television tower:

1. Synchronizes the focus of attention F: all observers simultaneously concentrate their attention on identical content
2. Creates the appearance of coherence vector synchronization: it appears that observers share a common configuration
3. Blocks the immersion operator ι: the connection between the observer and the content source is unidirectional

3.2. Analysis of the impact on the coherence vector

Although the television tower synchronizes the F component, it is unable to ensure synchronization of the remaining three components:

- E (emotional synchronization): observers may experience opposite emotions regarding the same content
- $(1 - \sigma)$ (consistency): the broadcast content may significantly increase internal contradiction if it conflicts with personal experience
- Λ (empirical reinforcement): the observer does not verify the broadcast content through their own direct experience

The formula for true coherence:

$$S = 1 - \frac{2}{n(n-1)} \sum_{i<j} |B_i - B_j| \tag{5}$$

With synchronized F_0 and diverging E_i, σ_i, Λ_i:

$$B_i = F_0^{w_1} \cdot E_i^{w_2} \cdot (1 - \sigma_i)^{w_3} \cdot \Lambda_i^{w_4} \tag{6}$$

Differences in the components E, σ, Λ preserve the overall variance, preventing the growth of true coherence.

3.3. Distinction between apparent and true coherence

We introduce the distinction between two forms of coherence:

$$S_{\text{apparent}} = S(F) = 1 - \frac{2}{n(n-1)} \sum_{i<j} |F_i - F_j| \approx 1 \tag{7}$$

$$S_{\text{true}} = S(B) = 1 - \frac{2}{n(n-1)} \sum_{i<j} |B_i - B_j| \ll 1 \tag{8}$$

The characteristic feature of broadcasting is a significant gap $S_{\text{apparent}} \gg S_{\text{true}}$: the system perceives itself as coherent, although true coherence remains low due to diverging beliefs, emotions, and experience [9].

3.4. Structural analogy with fixed configuration pathology

The television tower is functionally analogous to a mechanism of fixing a single configuration without feedback [12]. It blocks the operator ι, excluding cyclic updating of the configuration through observer experience, which leads to a static information field structure without spiral development.

IV. THE EIFFEL TOWER: A SYMBOLIC ATTENTION FOCUSER

4.1. Architectural specificity without content translation function

The Eiffel Tower (height 330 m) differs functionally from the broadcasting tower [4]: it does not transmit informational content but acts as a visible landmark and symbolic attractor of attention.

$$\text{Eiffel Tower}: \quad A_{\text{landmark}} = \text{const} \tag{9}$$

The tower functions as a spatial anchor for the focus archetype: each observer who sees it receives an impulse directing attention toward a single object. However, unlike the television tower, this focus does not impose configuration content — the observer independently constitutes their perception of the object.

4.2. Impact on the coherence vector components

Component	**Impact of the Eiffel Tower**
F (focus of attention)	Increases: the object captures and holds visual attention
E (emotional synchronization)	Weakly increases: evokes a shared aesthetic and emotional response
$(1-\sigma)$ (consistency)	Neutral: does not impose a narrative and does not create cognitive dissonar
Λ (empirical reinforcement)	Weakly increases: direct visual experience confirms the reality of the objec

Result: the Eiffel Tower functions as a weak positive synchronizer, increasing the focus and emotional components without significantly affecting consistency [6]. Although it does not close the cycle Φ, it does not actively destroy it either. Its role is that of a beacon of collective attention without forced imposition of configuration.

V. CELLULAR COMMUNICATION TOWERS: THE ARCHITECTURE OF FRAGMENTATION

5.1. From unified broadcasting to maximum focus splitting

If the broadcasting tower distributes a single programming content to a multitude of observers, the cellular network realizes the opposite function [8] — providing each observer with an individualized information stream:

$$\hat{T}_{\text{cell}}: \quad \{A_1 \neq A_2 \neq \ldots \neq A_n\} \tag{10}$$

Each observer receives a unique set of focus archetypes: personalized news feeds, recommended content, individual communication streams [10]. The cellular network implements a mechanism of maximum splitting of attentional foci.

5.2. Catastrophic impact on coherence

Component	Impact of the cellular network
F (focus)	Critically fragments: each observer is concentrated on a unique stream. Algorithmic design (infinite scrolling, notifications) destroys stable focus, causing constant fluctuations
E (emotional synchronization)	Desynchronizes: emotional states of observers diverge depending on individual content
$(1-\sigma)$ (consistency)	Critically decreases: abundance of contradictory information, information noise, cognitive dissonance
Λ (empirical reinforcement)	Substitutes: virtual experience replaces direct observation. $\Lambda_{\text{virtual}} \neq \Lambda_{\text{direct}}$

5.3. Formal analysis: coherence degradation to minimum

With N observers, each with an individual vector $(F_i, E_i, \sigma_i, \Lambda_i)$:

$$B_i = F_i^{w_1} \cdot E_i^{w_2} \cdot (1-\sigma_i)^{w_3} \cdot \Lambda_i^{w_4} \tag{11}$$

Divergence of all four components leads to maximum spread of the vector B_i, which is formalized as:

$$S \to S_{\min}(n) = \frac{1}{2} \quad \text{when} \quad n \to \infty \tag{12}$$

According to the central propositions of ODTOE [1], at such low coherence there exists no single set of physical laws applicable to all observers simultaneously. In the language of sociology and politics: each observer effectively lives in a reality incompatible with those of others [9, 10]. This is a formal ODTOE description of the phenomenon of "parallel information realities" and "post-truth."

5.4. The paradox of maximum connectivity with minimum coherence

The cellular network provides unprecedented connectivity (everyone can reach everyone) with minimum system coherence:

$$\text{Connectivity} = \frac{N(N-1)}{2} \to \text{grows exponentially} \tag{13}$$

$$\text{Coherence} = S(B) \to \text{decreases monotonically} \tag{14}$$

These two parameters do not correlate and are often inversely proportional [8]. In historical perspective, pyramidal architecture ensured coherence without constant connectivity, while the cellular network ensures connectivity at the cost of complete coherence destruction.

VI. SKYSCRAPERS: VERTICAL DENSIFICATION WITHOUT COHERENT ARCHITECTURE

6.1. Geometry: prismatic neutrality instead of pyramidal convergence

The skyscraper embodies the geometry of a rectangular prism or cylinder — a geometrically neutral form [5, 6]. Neither the convergence of the pyramid nor the divergence of the antenna is present. Parallel walls neither converge nor diverge. In ODTOE terms:

$$\text{Prism}: \quad \text{absent}\, \hat{O}, \iota, \Phi \tag{15}$$

The skyscraper functions as a container for observers, not as an active architectural operator. It performs neither actualization, nor immersion, nor closure of the self-observation cycle.

6.2. Impact: exponential growth of observer density with coherence degradation

The skyscraper increases the density of observers per unit of ground surface area. According to the structural results of ODTOE, the cardinality of the set of possible configurations grows exponentially with the number of observers. However, the building's architecture does not ensure coherence synchronization among its inhabitants.

On upper floors, coherence degrades for several reasons [15]:

1. Physical separation from the ground surface eliminates contact with the historical field
2. Natural landmarks (stars, horizon) are obscured by artificial structures
3. Direct empirical experience Λ is replaced by virtual experience

6.3. Relationship between geometric parameters and actualization

The historical pyramid (e.g., the Great Pyramid of Giza) has a base-to-height ratio of approximately $2.3 : 1$ [4]. A typical modern skyscraper is characterized by a ratio of $1 : 5$ to $1 : 15$. In ODTOE, this ratio reflects the degree of field convergence:

$$\text{Pyramid}: \quad \frac{|\text{base}|}{|\text{height}|} \gg 1 \quad \Rightarrow \quad \text{convergence from a broad field} \tag{16}$$

$$\text{Skyscraper}: \quad \frac{|\text{base}|}{|\text{height}|} \ll 1 \quad \Rightarrow \quad \text{diffuse actualization} \tag{17}$$

Structure	Operator	Effect on S	Closure of Φ
Pyramid	$\hat{O} + \iota$ (complete cycle)	$\uparrow\uparrow$	Closes completely
Eiffel Tower	Focus attractor	Weakly increases	Does not close
Television tower	Unidirectional $\hat{T}(F)$	Apparent S	Open
Skyscraper	Container (no operator)	$N \uparrow$, $S \rightarrow\downarrow$	Absent
Cellular network	Fragmenting $\hat{T}_{\text{cell}}$	Critical decrease	Actively destroys

VII. CONSOLIDATED ARCHITECTURAL TYPOLOGY

7.1. Classification by functional role in the ODTOE formalism

7.2. Coherence spectrum: from synchronization to fragmentation

$$
\begin{array}{c}
S \to 1 : \text{Maximum coherence} \\
| \\
\text{Pyramid } \triangle\nabla\text{: closed } \Phi\text{, all 4 components synchronized} \\
| \\
\text{Eiffel Tower: focuser of } F \text{ and } E\text{, neutral to } \sigma, \Lambda \\
| \\
\text{Skyscraper: neutral container, } N \uparrow \text{ without ensuring } S \\
| \\
\text{Television tower: synchronizes } F\text{, but } E, \sigma, \Lambda \text{ diverge} \\
| \\
\text{Cellular network: all 4 components split, } S \to S_{\text{min}} \\
| \\
S \to S_{\text{min}} : \text{Minimum coherence}
\end{array}
\tag{18}
$$

VIII. CIVILIZATIONAL DYNAMICS AND LONG-TERM CONSEQUENCES

8.1. Configuration lifetime as a function of coherence

$$
T(C) = \frac{T_0}{(1 - S)^n} \tag{19}
$$

Where T_0 is the baseline lifetime and n is the structural sensitivity parameter. This formula demonstrates the inverse relationship between coherence and configuration stability.

Architectural epoch	Effect on S	Expected $T(C)$
Pyramidal architecture	Increases S	Millennia
Religious architecture (cathedrals, mosques)	Moderate increase	Centuries
Broadcasting (1950–2000)	Apparent but false increase	Decades
Cellular networks (2010+)	Critical decrease in S	Months

Empirical observation confirms the prediction: in the era of cellular networks, the lifetime of social, political, and cultural configurations has sharply decreased [7]. Trends, narratives, and public priorities change on the scale of months instead of decades and centuries.

8.2. Stochastic dominance in a low-coherence system

$$D(\eta) = D_0 \cdot (1 - S) \tag{20}$$

With critical coherence degradation, the stochastic component $\eta(t)$ begins to dominate over gradient dynamics. The system loses the ability to move effectively toward stable configurations and begins to wander chaotically in state space.

In the language of social dynamics: decisions are made not on the basis of rational analysis (potential gradient) but on the basis of emotional reactions and viral content propagation (stochastic noise) [9, 10]. The ODTOE formalism describes this as a transition to a regime commonly characterized as "post-rationality" and "information chaos."

8.3. Divergence of realities and impossibility of a unified theory

According to the central Proposition of ODTOE [1], as $S \to S_{\text{min}}$ there exists no single set of physical laws applicable to all observers simultaneously. Mathematically, this means that the configurations $R_i = \hat{O}_i(\Psi)$ of different observers become mutually incompatible [13]. At the social level, this implies the literal existence of incompatible social realities within the same geographical and temporal domain.

IX. THE LAW OF COHERENT ARCHITECTURE

9.1. Necessary and sufficient conditions

From the structure of the vector $B = F^w \cdot E^w \cdot (1 - \sigma)^w \cdot \Lambda^w$, it follows that increasing coherence requires simultaneous synchronization of all four components. The multiplicative structure means that zeroing even one component zeroes the entire vector.

Component	**Synchronization in the pyramid**	**Disruption in the tower**
F (focus)	Unified astronomical landmarks	TV: content changes. Cellular: splits
E (emotion)	Shared ritual and experience	TV: partial. Cellular: individual
$(1 - \sigma)$	Unified consistent cosmology	TV: may increase. Cellular: maximal
Λ (experience)	Direct observation of phenomena	TV: mediated. Cellular: virtual

9.2. The central role of cycle closure Φ

The key distinction of pyramidal architecture is the closure of the complete self-observation cycle. Observers not only receive the actualized configuration (action of $\hat{O}$) but also return their experience back to the field (action of ι) through ritual, initiation, and burial [14]. This spiral dynamic ensures iterative updating of the configuration based on accumulated experience.

In contrast, any tower structure breaks this cycle: translation is unidirectional, and the observer is a passive receiver. The absence of the operator ι leads either to freezing of the configuration (as in a mausoleum) or to chaotic wandering (as in a cellular network).

9.3. Formulation of the law

Law of coherent architecture: an architectural structure increases the true coherence S of the observer system if and only if it simultaneously:

1. Synchronizes all four components of the vector B (focus, emotion, consistency, experience)
2. Closes the self-observation cycle $\Phi = \iota \circ \hat{O}$ (provides feedback from observers into the field)
3. Preserves organic connection with the historical field (contact with the ground surface, sensory heritage)
4. Does not substitute direct empirical experience with virtual simulations

Of the four types of modern towers examined, none satisfies these conditions:

- The television tower synchronizes only one component F
- The Eiffel Tower does not close the cycle Φ
- Skyscrapers disrupt the connection with the historical field
- Cellular networks actively destroy all four components simultaneously

X. HISTORICAL TRAJECTORY AND CIVILIZATIONAL CONSEQUENCES

10.1. Long-term degradation of coherent architecture

Epoch	**Dominant structure**	S_{effect}	$T(C)$
$\sim$ 3000 BCE — $\sim$ 500 CE	Pyramids, ziggurats, temples	$\uparrow\uparrow$ increases	Millennia
$\sim$ 500 — $\sim$ 1800 CE	Cathedrals, mosques, cult buildings	$\uparrow$ moderately increases	Centuries
1889 (Eiffel Tower)	Engineering verticals	$\rightarrow$ neutral	Decades
1920–1970	Skyscrapers and urbanism	$\downarrow$ weakly decreases	Decades
1967 (Ostankino)	Broadcasting towers	$S_{\text{appar}} \uparrow$, $S_{\text{true}} \downarrow$	Unstable
2010+	Cellular communication networks	$\downarrow\downarrow$ critically	Months

10.2. Mechanism of historical divergence

From the spiral dynamics of ODTOE it follows [2] that at each development cycle the system shifts from its previous state by an amount determined by the parameter $\pi - 3 \approx 0.14159$. With an open cycle Φ, this shift is not compensated by return, leading to unilateral divergence from the coherent configuration.

Historical evidence: from pyramids that functioned for millennia [4, 7], modern architecture has degraded to cellular networks generating new configurations in monthly cycles. This monotonic decrease in $T(C)$ reflects a fundamental transition from closed architecture (Φ closed) to open and fragmenting architecture (Φ open and split).

XI. CONCLUSION

Analysis of vertical architectural structures within the ODTOE formalism [1] reveals a qualitative distinction between the pyramidal architecture of ancient civilizations and the tower structures of modernity [4].

Classical pyramids functioned as complete architectural operators: they closed the self-observation cycle $\Phi = \iota \circ \hat{O}$, synchronized all four components of the coherence vector, and preserved organic connection with the historical field. The result was the possibility of long-term stabilization of socio-cultural configurations over millennia.

Modern towers and antennas realize a fundamentally different architectural logic:

1. **The broadcasting tower** implements unidirectional translation of a single focus archetype. Although it synchronizes the F component, it ignores the remaining three components and blocks the operator ι. The result is a gap between apparent coherence (S_{apparent}) and true coherence (S_{true}).

2. **The Eiffel Tower** functions as a gentle aesthetic focuser of attention. It does not close the cycle Φ and does not affect consistency or experience, but neither does it actively destroy coherence.

3. **Cellular communication networks** implement maximum splitting of all four components of the coherence vector. They generate a system where each observer lives in a literally incompatible reality. This is the ODTOE formalism for the phenomenon of "post-truth" and global information chaos.

4. **Skyscrapers** function as neutral containers that increase observer density without ensuring coherent architecture [15]. They separate people from the ground surface and the historical field, replacing Λ_{natural} with Λ_{virtual}.

The formalized result is the **law of coherent architecture**: true coherence is increased only by architectural structures that simultaneously (a) synchronize all four components of B, (b) close the self-observation cycle Φ, (c) preserve connection with the historical field, and (d) do not substitute direct experience. None of the modern tower structures satisfies these conditions.

The civilizational development vector describes a monotonic transition from pyramidal architecture (configuration lifetime $\sim$ millennia) to cellular networks (lifetime $\sim$ months) [2, 7]. In the ODTOE formalism, this reflects progressive degradation of coherent architecture and the transition of the system into a regime of stochastic chaos driven by information noise rather than rational dynamics [8, 11].

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